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THE
AMERICAN PRIMARY SCHOOL
ARITHMETIC:
DESIGNED
FOR THE USE OF PUPILS
IN
PRIMARY AND INTERMEDIATE SCHOOLS.

BY JAMES ROBINSON,
AUTHOR OF THE AMERICAN ARITHMETIC.

BOSTON:
PUBLISHED BY JOHN P. JEWETT & CO.
1851.

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PREFACE.

THE object of the author, in preparing this little work, has been to furnish lessons in Arithmetic for young children suited to their age and capacity. To accomplish this desirable object, care has been taken that they should be strictly progressive.

Commencing, therefore, with the simplest elements and combinations of numbers, the lessons advance by easy and gradual steps, in the form of tables, interspersed with practical examples and simple exercises to be performed on the slate, until they conduct the pupil through the various operations, with numbers as high as 12, of Addition, Subtraction, Multiplication, and Division.

Having completed the tables, Addition, Subtraction, Multiplication, and Division, and their appropriate arithmetical *terms* and *signs*, are clearly defined, and the *methods* of operation explained, and illustrated by appropriate examples. The *Rules* for their operation are also given, with exercises in larger numbers to be performed on the slate, followed by a few practical questions. It is believed that these slate exercises will furnish young children with *pleasing* employment, and *facilitate*, rather than *retard*, their progress in *mental* and *oral* arithmetic, and be found to be a valuable feature of the work.

Fractions, with appropriate exercises, have also been explained, and introduced as extensively as would comport with the general design of the book. Tables of money, weight, and measure, have been added, which may be learned by pupils in primary and intermediate schools.

With this brief explanation of the object and plan of the work, the author commends it to the favorable notice of teachers, school committees, and the friends of education.

J. R.

MAY, 1851.

TO TEACHERS.

It is presumed that most children have learned to count, to some extent, before they begin to attend school; yet it will be necessary that young pupils should be shown how many things the name of each number denotes. The most convenient apparatus for this purpose is the Numerical Frame. The balls on the wires are easily arranged, and may be seen by every member of the class at the same time; and, with appropriate illustrations by the teacher, pupils will readily perceive that every number is composed of as many single things, or units, as its name indicates. If the school is not furnished with a numerical frame, the teacher can make use of unit-marks upon the blackboard for illustration.

The author would suggest to those teachers who have had but little experience, that the introductory lessons should first be explained to the class; and that each of the succeeding lessons, in the order of their arrangement, should be given to the class, previous to recitation, with such explanations as shall be found necessary; and that the use of the book during recitation should be strictly prohibited. Questions should be asked promiscuously, and not in rotation; and no question should be asked or read more than once by the teacher, if done slowly and distinctly. The pupil should be required to repeat the question, and solve it, without being interrupted by the teacher, unless it be to make some criticism or correction. Care should be taken that the language of the pupil be strictly accurate, and that the best forms for the solution of problems should be carefully observed.

Pupils who have learned the first fourteen lessons will be able to read and write the first one hundred and forty-four numbers. Lesson XVI. may be omitted until CXVI. lessons have been learned; then Lesson XVI. should be learned, before commencing operations upon the slate with larger numbers.

THE
AMERICAN PRIMARY SCHOOL
ARITHMETIC.

INTRODUCTORY LESSON.

Definitions and Illustrations.

ARITHMETIC is the art of computing by numbers.
"Numbers are the expressions of one or more things
of the same kind."

Any whole thing is called a *unit*, or *one*; as, *one book*,
one slate, *one pencil*.

Every number greater than one is composed of units,
and each *succeeding* greater number contains one unit
more than the *preceding* number.

Thus: one and one more are *two*; two and one more
are *three*; three and one more are *four*; four and one
more are *five*; five and one more are *six*; six and one
more are *seven*; seven and one more are *eight*; eight and
one more are *nine*; nine and one more are *ten*; ten and
one more are *eleven*; eleven and one more are *twelve*;
and in this manner each succeeding greater number may
be formed.

One	* 1	Seven	***** 7
Two	** 2	Eight	***** 8
Three	*** 3	Nine	***** 9
Four	**** 4	Ten	***** 10
Five	***** 5	Eleven	***** 11
Six	***** 6	Twelve	***** 12

*The above illustrations are designed to show the pupil
that all numbers are composed of single units, and
that the words one, two, three, &c., always express the
same number of units, respectively; which should be
indelibly impressed on the mind, and retained in the
memory, of young children.*

LESSON I.

NOTATION is writing numbers ; Numeration is them. Numbers are written or expressed by words, and by capital letters.

The Arabic method of expressing numbers by figures is used in all arithmetical computations. Ten figures are used, viz., the figure one (1), the figure two (2), the figure three (3), the figure four (4), the figure five (5), the figure six (6), the figure seven (7), the figure eight (8), the figure nine (9), and the figure ten (0); each of which expresses as many units as it indicates. These ten figures are called the Arabic alphabet.

The Roman method of expressing numbers by letters is used in numbering the chapters of books, sections, &c. Seven letters are used, viz., I, V, X, L, C, D, and M. The letter I expresses one; V, five; X, ten; L, fifty; C, one hundred; D, five hundred; and M, thousand.

All numbers can be expressed by these ten figures and seven letters, by combining and repeating them, which will be shown to some extent in the following lessons :-

LESSON II.

One	1	<i>1</i>
Two	2	<i>2</i>
Three	3	<i>3</i>
Four	4	<i>4</i>
Five	5	<i>5</i>
Six	6	<i>6</i>
Seven	7	<i>7</i>
Eight	8	<i>8</i>
Nine	9	<i>9</i>
Ten	10	<i>10</i>
Eleven	11	<i>11</i>
Twelve	12	<i>12</i>

LESSON III.

Thirteen	13	<i>13</i>	XIII.
Fourteen	14	<i>14</i>	XIV.
Fifteen	15	<i>15</i>	XV.
Sixteen	16	<i>16</i>	XVI.
Seventeen	17	<i>17</i>	XVII.
Eighteen	18	<i>18</i>	XVIII.
Nineteen	19	<i>19</i>	XIX.
Twenty	20	<i>20</i>	XX.
Twenty-one	21	<i>21</i>	XXI.
Twenty-two	22	<i>22</i>	XXII.
Twenty-three	23	<i>23</i>	XXIII.
Twenty-four	24	<i>24</i>	XXIV.

LESSON IV.

Twenty-five	25	<i>25</i>	XXV.
Twenty-six	26	<i>26</i>	XXVI.
Twenty-seven	27	<i>27</i>	XXVII.
Twenty-eight	28	<i>28</i>	XXVIII.
Twenty-nine	29	<i>29</i>	XXIX.
Thirty	30	<i>30</i>	XXX.
Thirty-one	31	<i>31</i>	XXXI.
Thirty-two	32	<i>32</i>	XXXII.
Thirty-three	33	<i>33</i>	XXXIII.
Thirty-four	34	<i>34</i>	XXXIV.
Thirty-five	35	<i>35</i>	XXXV.
Thirty-six	36	<i>36</i>	XXXVI.

LESSON V.

Thirty-seven	37	<i>37</i>	XXXVII.
Thirty-eight	38	<i>38</i>	XXXVIII.
Thirty-nine	39	<i>39</i>	XXXIX.
Forty	40	<i>40</i>	XL.
Forty-one	41	<i>41</i>	XLI.
Forty-two	42	<i>42</i>	XLII.
Forty-three	43	<i>43</i>	XLIII.
Forty-four	44	<i>44</i>	XLIV.
Forty-five	45	<i>45</i>	XLV.
Forty-six	46	<i>46</i>	XLVI.
Forty-seven	47	<i>47</i>	XLVII.
Forty-eight	48	<i>48</i>	XLVIII.

LESSON VI.

Forty-nine	49	<i>49</i>	XLIX.
Fifty	50	<i>50</i>	L.
Fifty-one	51	<i>51</i>	LI.
Fifty-two	52	<i>52</i>	LII.
Fifty-three	53	<i>53</i>	LIII.
Fifty-four	54	<i>54</i>	LIV.
Fifty-five	55	<i>55</i>	LV.
Fifty-six	56	<i>56</i>	LVI.
Fifty-seven	57	<i>57</i>	LVII.
Fifty-eight	58	<i>58</i>	LVIII.
Fifty-nine	59	<i>59</i>	LIX.
<i>Sixty</i>	60	<i>60</i>	LX.

LESSON VII.

Sixty-one	61	<i>61</i>	LXI.
Sixty-two	62	<i>62</i>	LXII.
Sixty-three	63	<i>63</i>	LXIII.
Sixty-four	64	<i>64</i>	LXIV.
Sixty-five	65	<i>65</i>	LXV.
Sixty-six	66	<i>66</i>	LXVI.
Sixty-seven	67	<i>67</i>	LXVII.
Sixty-eight	68	<i>68</i>	LXVIII.
Sixty-nine	69	<i>69</i>	LXIX.
Seventy	70	<i>70</i>	LXX.
Seventy-one	71	<i>71</i>	LXXI.
Seventy-two	72	<i>72</i>	LXXII.

LESSON VIII.

Seventy-three	73	<i>73</i>	LXXIII.
Seventy-four	74	<i>74</i>	LXXIV.
Seventy-five	75	<i>75</i>	LXXV.
Seventy-six	76	<i>76</i>	LXXVI.
Seventy-seven	77	<i>77</i>	LXXVII.
Seventy-eight	78	<i>78</i>	LXXVIII.
Seventy-nine	79	<i>79</i>	LXXIX.
Eighty	80	<i>80</i>	LXXX.
Eighty-one	81	<i>81</i>	LXXXI.
Eighty-two	82	<i>82</i>	LXXXII.
Eighty-three	83	<i>83</i>	LXXXIII.
Eighty-four	84	<i>84</i>	LXXXIV.

LESSON IX.

Eighty-five	85	<i>85</i>	
Eighty-six	86	<i>86</i>	I
Eighty-seven	87	<i>87</i>	L
Eighty-eight	88	<i>88</i>	LX
Eighty-nine	89	<i>89</i>	I
Ninety	90	<i>90</i>	
Ninety-one	91	<i>91</i>	
Ninety-two	92	<i>92</i>	
Ninety-three	93	<i>93</i>	
Ninety-four	94	<i>94</i>	
Ninety-five	95	<i>95</i>	
Ninety-six	96	<i>96</i>	

LESSON X.

Ninety-seven	97	<i>97</i>
Ninety-eight	98	<i>98</i>
Ninety-nine	99	<i>99</i>
One hundred	100	<i>100</i>
One hundred and one	101	<i>101</i>
One hundred and two	102	<i>102</i>
One hundred and three	103	<i>103</i>
One hundred and four	104	<i>104</i>
One hundred and five	105	<i>105</i>
One hundred and six	106	<i>106</i>
One hundred and seven	107	<i>107</i>
One hundred and eight	108	<i>108</i>

LESSON XI.

One hundred and nine	109	<i>109</i>	CIX.
One hundred and ten	110	<i>110</i>	CX.
One hundred and eleven	111	<i>111</i>	CXI.
One hundred and twelve	112	<i>112</i>	CXII.
One hundred and thirteen	113	<i>113</i>	CXIII.
One hundred and fourteen	114	<i>114</i>	CXIV.
One hundred and fifteen	115	<i>115</i>	CXV.
One hundred and sixteen	116	<i>116</i>	CXVI.
One hundred and seventeen	117	<i>117</i>	CXVII.
One hundred and eighteen	118	<i>118</i>	CXVIII.
One hundred and nineteen	119	<i>119</i>	CXIX.
One hundred and twenty	120	<i>120</i>	CXX.

LESSON XII.

One hundred and twenty-one	121	<i>121</i>	CXXI.
One hundred and twenty-two	122	<i>122</i>	CXXII.
One hundred and twenty-three	123	<i>123</i>	CXXIII.
One hundred and twenty-four	124	<i>124</i>	CXXIV.
One hundred and twenty-five	125	<i>125</i>	CXXV.
One hundred and twenty-six	126	<i>126</i>	CXXVI.
One hundred and twenty-seven	127	<i>127</i>	CXXVII.
One hundred and twenty-eight	128	<i>128</i>	CXXVIII.
One hundred and twenty-nine	129	<i>129</i>	CXXIX.
One hundred and thirty	130	<i>130</i>	CXXX.
One hundred and thirty-one	131	<i>131</i>	CXXXI.
One hundred and thirty-two	132	<i>132</i>	CXXXII.

LESSON XIII.

One hundred and thirty-three	133	<i>133</i>	CXXXIII.
One hundred and thirty-four	134	<i>134</i>	CXXXIV.
One hundred and thirty-five	135	<i>135</i>	CXXXV.
One hundred and thirty-six	136	<i>136</i>	CXXXVI.
One hundred and thirty-seven	137	<i>137</i>	CXXXVII.
One hundred and thirty-eight	138	<i>138</i>	CXXXVIII.
One hundred and thirty-nine	139	<i>139</i>	CXXXIX.
One hundred and forty	140	<i>140</i>	CXL.
One hundred and forty-one	141	<i>141</i>	CXLI.
One hundred and forty-two	142	<i>142</i>	CXLII.
One hundred and forty-three	143	<i>143</i>	CXLIII.
One hundred and forty-four	144	<i>144</i>	CXLIV.

LESSON XIV.

One hundred and sixty	160	<i>160</i>	CLX.
One hundred and seventy	170	<i>170</i>	CLXX.
One hundred and eighty	180	<i>180</i>	CLXXX.
One hundred and ninety	190	<i>190</i>	CXC.
Two hundred and ten	210	<i>210</i>	CCX.
Three hundred and twenty	320	<i>320</i>	CCCXX.
Four hundred and thirty	430	<i>430</i>	CCCCXXX.
Five hundred and forty	540	<i>540</i>	DXL.
Six hundred and fifty	650	<i>650</i>	DCL.
Seven hundred and sixty	760	<i>760</i>	DCCLX.
Eight hundred and seventy	870	<i>870</i>	DCCCLXX.
Nine hundred and eighty	980	<i>980</i>	DCCCCLXXX.

LESSON XV.

NOTATION AND NUMERATION TABLE.

The figure 1 in the first place on the right expresses only its simple number *one*, and is called a unit of the *first order*; 1 in

2d period. 1st period.
Thousands. Units.

1 1 1 1 1 1
6th order, Hundreds of thousands.
5th order, Tens of thousands.
4th order, Units of thousands.
3d order, Hundreds.
2d order, Tens.
1st order, Units.

the second place expresses *ten*, or ten times one, and is called a unit of the *second order*; 1 in the third place expresses *one hundred*, or ten times ten, and is called a unit of the *third order*; 1 in the fourth place expresses *one thousand*, and is a unit of the *fourth order*; 1 in the fifth place expresses *ten thousand*, and is a unit of the *fifth order*, and 1 in the sixth place expresses *one hundred thousand*, and is a unit of the *sixth order*. The number expressed by this line of figures is one hundred eleven thousand one hundred and eleven.

	6	Six.
	6 5	Sixty-five.
	6 5 4	Six hundred fifty-four.
	6 5 4 3	Six thousand five hundred forty-three.
	6 5 4 3 2	Sixty-five thousand four hundred thirty-two.
	6 5 4 3 2 1	Six hundred fifty-four thousand three hundred twenty-one.

LESSON XVI.

Pupils should be required to read the following numbers :—

150.	211.	1,234.	76,543.	123,456.
161.	321.	2,345.	87,654.	234,567.
172.	432.	3,456.	98,765.	345,678.
183.	543.	4,567.	89,567.	406,504.
194.	654.	5,678.	78,456.	805,402.
200.	765.	6,789.	67,034.	999,999.

Learners should be required to express the following numbers by figures.

1. Two thousand five hundred and forty-three.
2. Five thousand seven hundred and eighty-five.
3. Ten thousand nine hundred and ninety-six.
4. Thirty-five thousand four hundred and twenty-five.
5. Seventy-eight thousand six hundred and fifty-seven.
6. Ninety-nine thousand nine hundred and ninety-nine.
7. Five hundred and five thousand four hundred and forty.
8. Nine hundred and eight thousand seven hundred and sixty.

LESSON XVII.

1 and 1 are 2	1 from 2 leaves 1
1 and 2 are 3	1 from 3 leaves 2
1 and 3 are 4	1 from 4 leaves 3
1 and 4 are 5	1 from 5 leaves 4
1 and 5 are 6	1 from 6 leaves 5
1 and 6 are 7	1 from 7 leaves 6
1 and 7 are 8	1 from 8 leaves 7
1 and 8 are 9	1 from 9 leaves 8
1 and 9 are 10	1 from 10 leaves 9
1 and 10 are 11	1 from 11 leaves 10
1 and 11 are 12	1 from 12 leaves 11
1 and 12 are 13	1 from 13 leaves 12

LESSON XVIII.

1 and 1 are how many?	1 from 2 leaves how many?
2 and 1 are how many?	2 from 3 leaves how many?
3 and 1 are how many?	3 from 4 leaves how many?
4 and 1 are how many?	4 from 5 leaves how many?
5 and 1 are how many?	5 from 6 leaves how many?
6 and 1 are how many?	6 from 7 leaves how many?
7 and 1 are how many?	7 from 8 leaves how many?
8 and 1 are how many?	8 from 9 leaves how many?
9 and 1 are how many?	9 from 10 leaves how many?
10 and 1 are how many?	10 from 11 leaves how many?
11 and 1 are how many?	11 from 12 leaves how many?
12 and 1 are how many?	12 from 13 leaves how many?

LESSON XIX.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	1	1	3	1	5	1
<i>and</i>	1	2	1	4	1	6
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<i>From</i>	2	4	6	8	10	12
<i>Take</i>	1	1	1	1	1	1
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XX.

1. William has 1 marble ; if his brother should give him 1 more, how many would he then have ?
2. Henry had 2 cents, and lost 1 of them ; how many had he left ?
3. Lucy found 1 pin, and her sister gave her 2 more ; how many pins had Lucy ?
4. Sarah had 3 needles, and has lost 1 of them ; how many has she left ?
5. Charles has 1 orange, and Henry has 3 ; how many have both of them ?
6. Thomas had 4 apples, and has given away 1 of them ; how many has he left ?
7. Susan had 1 pear given her, and she bought 4 more ; how many pears had Susan then ?
8. Jane bought 5 peaches, and has eaten 1 of them ; how many has she left ?
9. If you should buy 1 book to-day, and 5 more to-morrow, how many books would you have ?
10. If you have 6 cents, and should lose one of them, how many would you have left ?
11. James gave 1 cent for a marble, and 6 cents for a ball ; how many cents did he give for both ?
12. If you have 7 birds in a cage, and one of them should die, how many would be left alive ?
13. If you place 1 chair by the side of 7 chairs, how many chairs will there be ?
14. Catharine had 8 pinks, and has given 1 of them to Lucy ; how many has she left ?
15. Emily has 8 roses, and her little sister has 1 ; how many roses have both of them ?
16. John bought 9 nuts, and has lost 1 of them ; how many has he left ?
17. Francis paid 9 cents for a slate, and 1 cent for a pencil ; how many cents did both cost him ?
18. Sarah had 10 cherries, and gave her sister 1 of them ; how many has she left ?
19. William paid 12 cents for a book, and 1 cent for a pen ; how many cents did he pay away ?

LESSON XXI.

2 and 1 are 3	2 from 3 leaves 1
2 and 2 are 4	2 from 4 leaves 2
2 and 3 are 5	2 from 5 leaves 3
2 and 4 are 6	2 from 6 leaves 4
2 and 5 are 7	2 from 7 leaves 5
2 and 6 are 8	2 from 8 leaves 6
2 and 7 are 9	2 from 9 leaves 7
2 and 8 are 10	2 from 10 leaves 8
2 and 9 are 11	2 from 11 leaves 9
2 and 10 are 12	2 from 12 leaves 10
2 and 11 are 13	2 from 13 leaves 11
2 and 12 are 14	2 from 14 leaves 12

LESSON XXII.

1 and 2 are how many?	1 from 3 leaves how m
2 and 2 are how many?	2 from 4 leaves how m
3 and 2 are how many?	3 from 5 leaves how m
4 and 2 are how many?	4 from 6 leaves how m
5 and 2 are how many?	5 from 7 leaves how m
6 and 2 are how many?	6 from 8 leaves how m
7 and 2 are how many?	7 from 9 leaves how m
8 and 2 are how many?	8 from 10 leaves how m
9 and 2 are how many?	9 from 11 leaves how m
10 and 2 are how many?	10 from 12 leaves how m
11 and 2 are how many?	11 from 13 leaves how m
12 and 2 are how many?	12 from 14 leaves how m

LESSON XXIII.

EXERCISES TO BE PERFORMED ON THE SLATE

<i>Add</i>	2	3	2	8	2	1
<i>and</i>	2	2	4	2	10	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>From</i>	5	7	9	11	12	1
<i>Take</i>	2	2	2	2	2	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XXIV:

1. Richard bought 2 marbles, and found 2 more ; how many marbles had he then ?
2. Samuel has 4 cents ; if he should lose 2 of them, how many would he have left ?
3. There are 2 lamps on the mantel-piece, and 3 on the table ; how many are there in the room ?
4. Henry had 5 cents, and has lost 2 of them ; how many has he left ?
5. 6 little girls were on a visit, and 4 of them went home ; how many remained ?
6. James has 5 nuts, and John has 2 ; how many have both of them ?
7. If a man have 7 children, and 2 of them should die, how many would he have living ?
8. A farmer paid 6 dollars for flour, and 2 dollars for sugar ; how many dollars did he pay away ?
9. Augustus had 8 cents, and paid away 2 of them for an orange ; how many had he left ?
10. A lady paid 7 dollars for a bonnet, and 2 dollars for a cap ; how many dollars did she pay for both ?
11. Julia had 9 plums, and gave 2 of them to her sister ; how many had she left ?
12. Mary gave 8 roses to her teacher, and 2 to her sister ; how many roses did she give away ?
13. If you have 10 pens, and should give 2 of them to your sister, how many would you have left ?
14. Albert solved 9 questions in arithmetic, and Alfred 2 ; how many did they both solve ?
15. A farmer having 11 barrels of apples, sold 2 of them ; how many had he left ?
16. A boy sold 10 peaches, and had 2 remaining ; how many had he at first ?
17. Mary bought 12 needles, and has broken 2 of them ; how many has she left ?
18. A farmer had 12 cows, and purchased 2 more ; how many cows did he then have ?
19. Susan is 14 years old, and Jane is 12 ; how many years older is Susan than Jane ?

LESSON XXV.

3 and 1 are 4	3 from 4 leaves 1
3 and 2 are 5	3 from 5 leaves 2
3 and 3 are 6	3 from 6 leaves 3
3 and 4 are 7	3 from 7 leaves 4
3 and 5 are 8	3 from 8 leaves 5
3 and 6 are 9	3 from 9 leaves 6
3 and 7 are 10	3 from 10 leaves 7
3 and 8 are 11	3 from 11 leaves 8
3 and 9 are 12	3 from 12 leaves 9
3 and 10 are 13	3 from 13 leaves 10
3 and 11 are 14	3 from 14 leaves 11
3 and 12 are 15	3 from 15 leaves 12

LESSON XXVI.

1 and 3 are how many?	1 from 4 leaves how many?
2 and 3 are how many?	2 from 5 leaves how many?
3 and 3 are how many?	3 from 6 leaves how many?
4 and 3 are how many?	4 from 7 leaves how many?
5 and 3 are how many?	5 from 8 leaves how many?
6 and 3 are how many?	6 from 9 leaves how many?
7 and 3 are how many?	7 from 10 leaves how many?
8 and 3 are how many?	8 from 11 leaves how many?
9 and 3 are how many?	9 from 12 leaves how many?
10 and 3 are how many?	10 from 13 leaves how many?
11 and 3 are how many?	11 from 14 leaves how many?
12 and 3 are how many?	12 from 15 leaves how many?

LESSON XXVII.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	3	5	3	7	3	1.
<i>and</i>	4	3	6	3	11	.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>From</i>	7	9	10	12	14	1.
<i>Take</i>	3	3	3	3	3	.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XXVIII.

1. A poor widow has 3 sons and 4 daughters ; how many children has the poor widow ?
2. A man has 7 children ; 4 of them are boys. How many of them are girls ?
3. If you pay 5 cents for an orange, and 3 cents for a lemon, how many cents do you pay for both ?
4. Ralph bought a ball for 5 cents, and sold it for 8 cents ; how many cents did he gain by trading ?
5. Eliza has 6 roses on one bush, and 3 on another ; how many roses are there on both ?
6. Eliza had 9 roses, and she gave 3 of them to her sister ; how many had she left ?
7. There are 3 birds on one tree and 7 on another ; how many are there on both trees ?
8. There were 10 birds in a cage, but a boy has taken 3 of them out ; how many are left in the cage ?
9. A little girl bought 8 cherries, and her brother gave her 3 more ; how many had she then ?
10. Julia bought 11 plums, and she has eaten 3 of them : how many has she left ?
11. George gave 3 cents for a pencil, and 9 cents for a book ; how many cents did he give for both of them ?
12. Frank had 12 chickens, but 3 of them have been killed by the hawks ; how many has he left ?
13. A farmer purchased 10 cows of one man, and 3 of another ; how many cows did he purchase ?
14. Joseph paid 13 cents for a knife, and sold it for 10 cents ; how many cents did he lose ?
15. Margaret is 11 years old, and Eliza is 3 years older than Margaret ; how old is Eliza ?
16. A cooper made 14 barrels, and has sold 11 of them ; how many has he remaining unsold ?
17. A farmer sold a firkin of butter for 12 dollars, and a cheese for 3 dollars ; how many dollars did he receive ?
18. A grocer purchased 15 firkins of butter, and has sold 3 of them ; how many has he remaining unsold ?

LESSON XXIX.

4 and 1 are 5	4 from 5 leaves 1
4 and 2 are 6	4 from 6 leaves 2
4 and 3 are 7	4 from 7 leaves 3
4 and 4 are 8	4 from 8 leaves 4
4 and 5 are 9	4 from 9 leaves 5
4 and 6 are 10	4 from 10 leaves 6
4 and 7 are 11	4 from 11 leaves 7
4 and 8 are 12	4 from 12 leaves 8
4 and 9 are 13	4 from 13 leaves 9
4 and 10 are 14	4 from 14 leaves 10
4 and 11 are 15	4 from 15 leaves 11
4 and 12 are 16	4 from 16 leaves 12

LESSON XXX.

1 and 4 are how many?	1 from 5 leaves how many?
2 and 4 are how many?	2 from 6 leaves how many?
3 and 4 are how many?	3 from 7 leaves how many?
4 and 4 are how many?	4 from 8 leaves how many?
5 and 4 are how many?	5 from 9 leaves how many?
6 and 4 are how many?	6 from 10 leaves how many?
7 and 4 are how many?	7 from 11 leaves how many?
8 and 4 are how many?	8 from 12 leaves how many?
9 and 4 are how many?	9 from 13 leaves how many?
10 and 4 are how many?	10 from 14 leaves how many?
11 and 4 are how many?	11 from 15 leaves how many?
12 and 4 are how many?	12 from 16 leaves how many?

LESSON XXXI.

EXERCISES TO BE PERFORMED ON THE SLATE.

Add 4 7 4 10 4 12
and 6 4 9 4 11 4

From	10	11	13	14	15	16
Take	4	7	9	4	11	4

LESSON XXXII.

1. A boy found 4 eggs in one bird's nest, and 3 in another ; how many eggs did he find in both nests ?
2. If you have 7 pigeons, and 3 of them should die, how many would remain alive ?
3. Frances paid 4 cents for a thimble, and 5 cents for some needles ; how many cents did she pay away ?
4. A truant boy robbed some birds' nests of 9 eggs, and broke 4 of them ; how many remained unbroken ?
5. There are 6 girls in one class, and 4 in another ; how many are there in both classes ?
6. 10 boys were called out to recite ; 4 of them, not having learned the lesson, were sent back. How many recited ?
7. A boy lived in Dedham till he was 7 years old, and then moved to Boston, where he has lived 4 years. How old is he ?
8. Rebecca is now 11 years old, and has attended school the last 7 years. How old was Rebecca when she began to attend school ?
9. There are 8 houses on one side of a street, and 4 on the other ; how many houses are there on both sides ?
10. If a man who owns 12 horses should sell 4 of them, how many horses would he have left ?
11. If a skein of silk is worth 4 cents, and a yard of ribbon 9 cents, how many cents are both of them worth ?
12. Sarah paid 13 cents for a paper of pins and a yard of tape. The price of the pins was 9 cents ; what was the price of the tape ?
13. If a boy perform 10 questions in arithmetic in the forenoon, and 4 more in the afternoon, how many questions will he have performed during the day ?
14. If a girl have 14 questions in arithmetic given her for a lesson, and she perform but 10 of them, how many remain to be performed ?
15. In a recitation there were 12 questions answered *correctly*, and 4 answered *incorrectly* ; how many questions were asked ?

LESSON XXXIII.

5 and 1 are 6	5 from 6 leaves 1
5 and 2 are 7	5 from 7 leaves 2
5 and 3 are 8	5 from 8 leaves 3
5 and 4 are 9	5 from 9 leaves 4
5 and 5 are 10	5 from 10 leaves 5
5 and 6 are 11	5 from 11 leaves 6
5 and 7 are 12	5 from 12 leaves 7
5 and 8 are 13	5 from 13 leaves 8
5 and 9 are 14	5 from 14 leaves 9
5 and 10 are 15	5 from 15 leaves 10
5 and 11 are 16	5 from 16 leaves 11
5 and 12 are 17	5 from 17 leaves 12

LESSON XXXIV.

1 and 5 are how many?	1 from 6 leaves how many?
2 and 5 are how many?	2 from 7 leaves how many?
3 and 5 are how many?	3 from 8 leaves how many?
4 and 5 are how many?	4 from 9 leaves how many?
5 and 5 are how many?	5 from 10 leaves how many?
6 and 5 are how many?	6 from 11 leaves how many?
7 and 5 are how many?	7 from 12 leaves how many?
8 and 5 are how many?	8 from 13 leaves how many?
9 and 5 are how many?	9 from 14 leaves how many?
10 and 5 are how many?	10 from 15 leaves how many?
11 and 5 are how many?	11 from 16 leaves how many?
12 and 5 are how many?	12 from 17 leaves how many?

LESSON XXXV.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	5	8	5	10	5	1
<i>and</i>	6	5	9	5	11	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<i>From</i>	11	13	14	15	16	1
<i>Take</i>	6	5	9	5	11	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XXXVI.

1. A hen has 5 black chickens and 4 white ones ; how many chickens are there of both colors ?
2. A farmer has 9 cows ; 5 of them are red, and the others are brown. How many are brown ?
3. How many cents will it take to purchase 2 picture-books, if one of them cost 6 cents and the other 5 cents ?
4. A drover had 11 lambs, but he has sold 5 of them ; how many lambs has he left ?
5. Robert has 5 cherries, and Julia has 7. If Robert gives his to Julia, how many will she then have ?
6. Julia had 12 cherries, but she has eaten 5 of them ; how many has she left ?
7. There are 8 birds in one cage, and 5 in another ; how many birds are there in both cages ?
8. If a man own 13 horses, and should sell 5 of them, how many would he have left ?
9. If a man have 5 pigs in one pen, and 9 in another, how many pigs are there in both pens ?
10. If a butcher have 14 fat pigs, and should kill 5 of them, how many would he have left alive ?
11. A farmer has 10 cows in one pasture, and 5 in another ; how many cows has he in both pastures ?
12. If a man who owns 15 cows should sell 5 of them, how many would he have left ?
13. A farmer collected 5 bushels of apples from one tree, and 11 bushels from another ; how many bushels did he collect from both trees ?
14. Thomas paid 16 dollars for a watch, and sold it for 11 dollars ; how many dollars did he lose by trading ?
15. A flour-merchant sold 12 barrels of flour on Monday, and 5 barrels on Tuesday ; how many barrels did he sell in the two days ?
16. In a pasture there are 17 sheep ; 5 of them are black, and the others are white. How many of them are white ?

LESSON XXXVII.

6 and 1 are 7	6 from 7 leaves 1
6 and 2 are 8	6 from 8 leaves 2
6 and 3 are 9	6 from 9 leaves 3
6 and 4 are 10	6 from 10 leaves 4
6 and 5 are 11	6 from 11 leaves 5
6 and 6 are 12	6 from 12 leaves 6
6 and 7 are 13	6 from 13 leaves 7
6 and 8 are 14	6 from 14 leaves 8
6 and 9 are 15	6 from 15 leaves 9
6 and 10 are 16	6 from 16 leaves 10
6 and 11 are 17	6 from 17 leaves 11
6 and 12 are 18	6 from 18 leaves 12

LESSON XXXVIII.

1 and 6 are how many?	1 from 7 leaves how many?
2 and 6 are how many?	2 from 8 leaves how many?
3 and 6 are how many?	3 from 9 leaves how many?
4 and 6 are how many?	4 from 10 leaves how many?
5 and 6 are how many?	5 from 11 leaves how many?
6 and 6 are how many?	6 from 12 leaves how many?
7 and 6 are how many?	7 from 13 leaves how many?
8 and 6 are how many?	8 from 14 leaves how many?
9 and 6 are how many?	9 from 15 leaves how many?
10 and 6 are how many?	10 from 16 leaves how many?
11 and 6 are how many?	11 from 17 leaves how many?
12 and 6 are how many?	12 from 18 leaves how many?

LESSON XXXIX.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	6	8	6	10	6	1
<i>and</i>	7	6	9	6	11	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>From</i>	13	14	15	16	17	1
<i>Take</i>	6	8	6	10	11	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XL.

1. There are 6 boys in one division of a class, and 4 boys in another ; how many boys are there in both divisions ?
2. There are 10 girls in a class at school ; 6 of them are studying, and the others are idle. How many of them are idle ?
3. Thomas owns 6 doves ; if he should buy 5 more, how many doves would he then own ?
4. If you have 11 pigeons, and should kill 6 of them, how many would be left alive ?
5. There are 7 apple-trees and 6 pear-trees in a garden ; how many trees are there in the garden ?
6. There are 13 fruit-trees in a garden ; 6 of them are peach-trees, and the others are cherry-trees. How many of them are cherry-trees ?
7. Henry paid 6 cents for a writing-book, and 8 cents for pens ; how many cents did the book and pens cost him ?
8. Lucy paid 14 cents for a skein of silk and a paper of pins ; the price of the silk was 6 cents. What was the price of the pins ?
9. If you pick 9 quarts of strawberries to-day, and 6 quarts to-morrow, how many quarts will you have picked in the two days ?
10. George gave 15 peaches to his sister, and 9 to his brother ; how many more did he give to his sister than he gave to his brother ?
11. A tailor sold a coat for 10 dollars, and a pair of pants for 6 dollars ; how many dollars did he receive for both garments ?
12. Stephen rode 16 miles in the cars, and 6 miles in a chaise ; how many more miles did he ride in the cars than in the chaise ?
13. A grocer sold 6 pounds of sugar at one time, and 11 pounds at another time ; how many pounds of sugar did the grocer sell ?
14. Sarah is 17 years old, and James is 12 ; what is the difference of their ages ?

LESSON XLI.

7 and 1 are 8	7 from 8 leaves 1
7 and 2 are 9	7 from 9 leaves 2
7 and 3 are 10	7 from 10 leaves 3
7 and 4 are 11	7 from 11 leaves 4
7 and 5 are 12	7 from 12 leaves 5
7 and 6 are 13	7 from 13 leaves 6
7 and 7 are 14	7 from 14 leaves 7
7 and 8 are 15	7 from 15 leaves 8
7 and 9 are 16	7 from 16 leaves 9
7 and 10 are 17	7 from 17 leaves 10
7 and 11 are 18	7 from 18 leaves 11
7 and 12 are 19	7 from 19 leaves 12

LESSON XLII.

1 and 7 are how many?	1 from 8 leaves how n
2 and 7 are how many?	2 from 9 leaves how n
3 and 7 are how many?	3 from 10 leaves how n
4 and 7 are how many?	4 from 11 leaves how n
5 and 7 are how many?	5 from 12 leaves how n
6 and 7 are how many?	6 from 13 leaves how n
7 and 7 are how many?	7 from 14 leaves how n
8 and 7 are how many?	8 from 15 leaves how n
9 and 7 are how many?	9 from 16 leaves how n
10 and 7 are how many?	10 from 17 leaves how n
11 and 7 are how many?	11 from 18 leaves how n
12 and 7 are how many?	12 from 19 leaves how n

LESSON XLIII.

EXERCISES TO BE PERFORMED ON THE SLAT

<i>Add</i>	7	6	7	10	7
<i>and</i>	5	7	9	7	11
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<i>From</i>	12	13	16	17	18
<i>Take</i>	5	7	9	10	7
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XLIV.

1. If you spend 7 cents to-day, and 5 more to-morrow, how many cents will you have spent in both days?
2. If a market-man have 12 chickens, and should sell 5 of them, how many would he have left?
3. If there are 6 children in one family and 7 in another, how many children are there in the two families?
4. There are 13 children in two families; in one of them there are 7 children. How many are there in the other?
5. A little boy had 7 apples in a basket, and his sister put in 7 more; how many apples are there in the basket?
6. If you have 14 pears in a basket, and should sell 7 of them, how many would you have remaining?
7. A farmer paid 8 dollars for a plough, and 7 dollars for a harrow; how many dollars did he pay for both of them?
8. A market-woman had 15 oranges, and sold 7 of them; how many has she remaining unsold?
9. How many cents would be required to pay for two picture-books, if the price of one of them is 7 cents, and the price of the other 9 cents?
10. A boy paid 16 cents for a ball and humming-top; the price of the humming-top was 9 cents. What was the price of the ball?
11. A girl paid 10 cents for a doll, and 7 cents for ribbon; how many cents did she pay away?
12. A boy has 17 cents; if he should spend 7 of them, how many would he have left?
13. There are two pieces of cloth; one of them contains 7 yards, and the other 11 yards. How many yards are there in the two pieces?
14. A trader had a piece of silk which measured 18 yards; he sold 11 yards of it to a lady for a dress. How many yards were left?
15. Julia and Mary went into the garden to gather flowers; Mary gathered 12 roses, and Julia 7. How many roses did they both gather?

LESSON XLV.

8 and 1 are 9	8 from 9 leaves 1
8 and 2 are 10	8 from 10 leaves 2
8 and 3 are 11	8 from 11 leaves 3
8 and 4 are 12	8 from 12 leaves 4
8 and 5 are 13	8 from 13 leaves 5
8 and 6 are 14	8 from 14 leaves 6
8 and 7 are 15	8 from 15 leaves 7
8 and 8 are 16	8 from 16 leaves 8
8 and 9 are 17	8 from 17 leaves 9
8 and 10 are 18	8 from 18 leaves 10
8 and 11 are 19	8 from 19 leaves 11
8 and 12 are 20	8 from 20 leaves 12

LESSON XLVI.

1 and 8 are how many?	1 from 9 leaves how n
2 and 8 are how many?	2 from 10 leaves how n
3 and 8 are how many?	3 from 11 leaves how n
4 and 8 are how many?	4 from 12 leaves how n
5 and 8 are how many?	5 from 13 leaves how n
6 and 8 are how many?	6 from 14 leaves how n
7 and 8 are how many?	7 from 15 leaves how n
8 and 8 are how many?	8 from 16 leaves how n
9 and 8 are how many?	9 from 17 leaves how n
10 and 8 are how many?	10 from 18 leaves how n
11 and 8 are how many?	11 from 19 leaves how n
12 and 8 are how many?	12 from 20 leaves how n

LESSON XLVII.

EXERCISES TO BE PERFORMED ON THE SLATE

<i>Add</i>	8	8	9	8	11
<i>and</i>	7	8	8	10	8
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<i>From</i>	15	16	17	18	19
<i>Take</i>	7	8	9	8	11
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XLVIII.

1. If a writing-book cost 8 cents, and a lead-pencil 5 cents, how many cents do they both cost ?
2. A boy having 13 cents, paid away 8 of them for a slate ; what number of cents had he left ?
3. If one boy should catch 6 perch, and another 8, how many would they both catch ?
4. A boy caught 14 trout, and sold 6 of them ; how many had he left ?
5. 8 boys are playing in one street, and 7 in another ; how many are playing in both streets ?
6. 15 little girls were on a visit ; at nine o'clock, 7 of them went home. How many remained ?
7. There are 9 boys in one sleigh, and 8 in another ; how many boys are there in both sleighs ?
8. There are 17 girls in a class ; 9 of them are ciphering, and the others are writing. How many are writing ?
9. There are 8 boys in the first division of a class, and 10 in the second ; how many boys are there in the class ?
10. Two places are 18 miles apart ; if a boy start from one place, and travel 10 miles towards the other, how many miles is he from the other place ?
11. If you should buy 11 apples of one kind, and 8 of another kind, how many apples would you have of both kinds ?
12. A boy purchased 19 pears, and has sold 8 of them ; how many has he left unsold ?
13. Eliza has 12 flower-pots, and Jane has 8 ; how many flower-pots have both of them ?
14. Emma counted 20 roses on her rose-bush this morning ; afterwards she picked off 8 of them. How many remained on the rose-bush ?
15. Catharine's book has 8 pictures in it, and Mary's has 12 ; how many pictures do both books contain ?
16. In the arithmetic class there are 20 pupils ; 12 of them recited their lesson correctly. How many of them failed ?

LESSON XLIX.

9 and 1 are 10	9 from 10 leaves 1
9 and 2 are 11	9 from 11 leaves 2
9 and 3 are 12	9 from 12 leaves 3
9 and 4 are 13	9 from 13 leaves 4
9 and 5 are 14	9 from 14 leaves 5
9 and 6 are 15	9 from 15 leaves 6
9 and 7 are 16	9 from 16 leaves 7
9 and 8 are 17	9 from 17 leaves 8
9 and 9 are 18	9 from 18 leaves 9
9 and 10 are 19	9 from 19 leaves 10
9 and 11 are 20	9 from 20 leaves 11
9 and 12 are 21	9 from 21 leaves 12

LESSON L.

1 and 9 are how many?	1 from 10 leaves how many?
2 and 9 are how many?	2 from 11 leaves how many?
3 and 9 are how many?	3 from 12 leaves how many?
4 and 9 are how many?	4 from 13 leaves how many?
5 and 9 are how many?	5 from 14 leaves how many?
6 and 9 are how many?	6 from 15 leaves how many?
7 and 9 are how many?	7 from 16 leaves how many?
8 and 9 are how many?	8 from 17 leaves how many?
9 and 9 are how many?	9 from 18 leaves how many?
10 and 9 are how many?	10 from 19 leaves how many?
11 and 9 are how many?	11 from 20 leaves how many?
12 and 9 are how many?	12 from 21 leaves how many?

LESSON LI.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	9	6	9	10	9	1.
<i>and</i>	5	9	8	9	11	—
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

<i>From</i>	14	15	17	19	20	2.
<i>Take</i>	5	9	8	9	11	1.
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

LESSON LII.

1. A boy was born in Milton, and lived there until he was 9 years old ; he then moved to Boston, and has lived in Boston 5 years. How old is he ?
2. A girl is 14 years old ; she lived in the country until she was 9 years old, and has since lived in Boston. How many years has she lived in Boston ?
3. There are 9 chairs in one room, and 6 in another ; how many chairs are there in the two rooms ?
4. If there are 15 plates upon a table, and 6 of them should be taken off, how many would remain upon the table ?
5. If one hen has 9 chickens, and another hen has 7, how many chickens have both hens ?
6. If you have 16 young turkeys, and 7 of them should die, how many would be left alive ?
7. If there are 8 sheep in one pasture, and 9 in another, how many sheep are there in the two pastures ?
8. If a drover have 17 fat sheep, and should sell 8 of them, how many would he have remaining unsold ?
9. There are 9 windows on the front side of a house, and 9 on the back side ; how many windows are there on the two sides ?
10. If there are 18 panes of glass in a window, and 9 of them should be broken by a storm, how many would remain whole ?
11. Julia has recited 10 lessons to her Sabbath-school teacher, and her sister Harriet has recited 9. How many lessons have they both recited ?
12. There are 19 scholars in the first class of a Sabbath-school ; ten of them are boys, and the others are girls. How many of them are girls ?
13. A man paid 11 dollars for three hats, and 9 dollars for two pairs of boots ; how many dollars did he pay for the whole ?
14. A gentleman purchased 20 pounds of flour, and after using a part of it, found that he had 11 pounds left ; how many pounds had he used ?

LESSON LIII.

10 and 1 are 11	10 from 11 leaves 1
10 and 2 are 12	10 from 12 leaves 2
10 and 3 are 13	10 from 13 leaves 3
10 and 4 are 14	10 from 14 leaves 4
10 and 5 are 15	10 from 15 leaves 5
10 and 6 are 16	10 from 16 leaves 6
10 and 7 are 17	10 from 17 leaves 7
10 and 8 are 18	10 from 18 leaves 8
10 and 9 are 19	10 from 19 leaves 9
10 and 10 are 20	10 from 20 leaves 10
10 and 11 are 21	10 from 21 leaves 11
10 and 12 are 22	10 from 22 leaves 12

LESSON LIV.

1 and 10 are how many?	1 from 11 leaves how many?
2 and 10 are how many?	2 from 12 leaves how many?
3 and 10 are how many?	3 from 13 leaves how many?
4 and 10 are how many?	4 from 14 leaves how many?
5 and 10 are how many?	5 from 15 leaves how many?
6 and 10 are how many?	6 from 16 leaves how many?
7 and 10 are how many?	7 from 17 leaves how many?
8 and 10 are how many?	8 from 18 leaves how many?
9 and 10 are how many?	9 from 19 leaves how many?
10 and 10 are how many?	10 from 20 leaves how many?
11 and 10 are how many?	11 from 21 leaves how many?
12 and 10 are how many?	12 from 22 leaves how many?

LESSON LV.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	10	6	10	9	11	1
<i>and</i>	5	10	7	10	10	1
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<i>From</i>	15	16	17	19	21	2
<i>Take</i>	5	10	7	10	11	1
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON LVI.

1. A little boy is 10 years old, and his sister is 4 years older than he is ; how old is his sister ?
2. Amelia is 14 years old, and her brother Marcellus is 4 years younger ; how old is Marcellus ?
3. The American gold eagle is valued at 10 dollars, the half eagle at 5 dollars ; what is the value of both of them ?
4. Caroline has 15 credit-marks, and Jane has 10 ; how many more has Caroline than Jane ?
5. A lady paid 6 dollars for a cap, and 10 dollars for a bonnet ; how many dollars did she pay for both ?
6. A man gave 16 dollars for a vest and coat. The price of the coat was 10 dollars ; what was the price of the vest ?
7. Henry paid 10 cents for a writing-book, and 7 cents for pens ; how many cents did the writing-book and pens cost him ?
8. Albert is 17 years old, and his sister is 10 ; how many years older is Albert than his sister ?
9. Annie is 8 years old, and Emily is 10 ; what is the sum of both their ages ?
10. William purchased 18 pears, and gave 10 of them to his sister ; how many has he left ?
1. If I pay 10 cents for a pound of raisins, and 9 cents for a pound of figs, how many cents do they cost me ?
2. A farmer has 19 lambs ; if he should sell 10 of them, how many would he have left ?
3. Jane has 10 pears and 10 peaches in her fruit-basket ; how many of both kinds of fruit has she in her basket ?
4. Charles bought 20 nuts, and gave 10 of them to Edward ; how many had he left ?
5. There are 11 girls in the first section of a class, and 10 in the second ; how many girls are there in the class ?
6. In a private school there are 21 scholars, and 10 of them are boys ; how many of them are girls ?

LESSON LVII.

11 and 1 are 12	11 from 12 leaves 1
11 and 2 are 13	11 from 13 leaves 2
11 and 3 are 14	11 from 14 leaves 3
11 and 4 are 15	11 from 15 leaves 4
11 and 5 are 16	11 from 16 leaves 5
11 and 6 are 17	11 from 17 leaves 6
11 and 7 are 18	11 from 18 leaves 7
11 and 8 are 19	11 from 19 leaves 8
11 and 9 are 20	11 from 20 leaves 9
11 and 10 are 21	11 from 21 leaves 10
11 and 11 are 22	11 from 22 leaves 11
11 and 12 are 23	11 from 23 leaves 12

LESSON LVIII.

1 and 11 are how many?	1 from 12 leaves how ma
2 and 11 are how many?	2 from 13 leaves how ma
3 and 11 are how many?	3 from 14 leaves how ma
4 and 11 are how many?	4 from 15 leaves how ma
5 and 11 are how many?	5 from 16 leaves how ma
6 and 11 are how many?	6 from 17 leaves how ma
7 and 11 are how many?	7 from 18 leaves how ma
8 and 11 are how many?	8 from 19 leaves how ma
9 and 11 are how many?	9 from 20 leaves how ma
10 and 11 are how many?	10 from 21 leaves how ma
11 and 11 are how many?	11 from 22 leaves how ma
12 and 11 are how many?	12 from 23 leaves how ma

LESSON LIX.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	11	6	11	10	11	1
<i>and</i>	5	11	9	11	11	1
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<i>From</i>	16	17	20	21	22	2
<i>Take</i>	5	11	11	10	11	1
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON LX.

1. One man gives a poor girl 11 cents, and another gives her 4; how many cents does the poor girl get?
2. A poor boy has 15 cents; if he should pay away 4 of them for bread, how many cents would he have left?
3. William has 11 apples, and Henry has 4; how many apples have both of them?
4. A market-woman having 16 eggs, sold 11 of them; how many had she remaining unsold?
5. Robert caught 11 fish, and Henry caught 6; how many did they both catch?
6. William is 17 years old, and Jane is 11; what is the difference of their ages?
7. A farmer sold 11 barrels of apples to one man, and 7 barrels to another; how many did he sell to both of them?
8. William sold a knife for 18 cents, which was 7 cents more than it cost him; what did he pay for the knife?
9. Samuel sold some pears for 11 cents, and some peaches for 8 cents; how many cents did he receive for his pears and peaches?
10. Henry carried 19 boxes of strawberries to market, and sold 8 boxes of them; how many boxes has he remaining unsold?
11. A farmer has two fields of wheat; one contains 9 acres and the other 11 acres. How many acres are there in the two fields?
12. A grocer purchased 20 boxes of figs, and has sold 9 of them; how many boxes has he remaining unsold?
13. Elizabeth purchased 11 yards of silk, and Jane purchased 10 yards; how many yards did they both purchase?
14. A merchant had a piece of muslin containing 21 yards, and sold 11 yards of it to a lady; how many yards are there left?

LESSON LXI.

12 and 1 are 13	12 from 13 leaves 1
12 and 2 are 14	12 from 14 leaves 2
12 and 3 are 15	12 from 15 leaves 3
12 and 4 are 16	12 from 16 leaves 4
12 and 5 are 17	12 from 17 leaves 5
12 and 6 are 18	12 from 18 leaves 6
12 and 7 are 19	12 from 19 leaves 7
12 and 8 are 20	12 from 20 leaves 8
12 and 9 are 21	12 from 21 leaves 9
12 and 10 are 22	12 from 22 leaves 10
12 and 11 are 23	12 from 23 leaves 11
12 and 12 are 24	12 from 24 leaves 12

LESSON LXII.

1 and 12 are how many?	12 from 13 leaves how many?
2 and 12 are how many?	12 from 14 leaves how many?
3 and 12 are how many?	12 from 15 leaves how many?
4 and 12 are how many?	12 from 16 leaves how many?
5 and 12 are how many?	12 from 17 leaves how many?
6 and 12 are how many?	12 from 18 leaves how many?
7 and 12 are how many?	12 from 19 leaves how many?
8 and 12 are how many?	12 from 20 leaves how many?
9 and 12 are how many?	12 from 21 leaves how many?
10 and 12 are how many?	12 from 22 leaves how many?
11 and 12 are how many?	12 from 23 leaves how many?
12 and 12 are how many?	12 from 24 leaves how many?

LESSON LXIII.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	12	6	12	9	12	12
<i>and</i>	5	12	8	12	11	12
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>From</i>	17	18	20	21	23	24
<i>Take</i>	5	12	8	12	11	12
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON LXIV.

1. A mechanic paid 12 dollars for a firkin of butter, and 5 dollars for a barrel of flour ; how many dollars did the two articles cost him ?
2. A man purchased 17 bushels of oats, and has used 5 bushels in feeding his horses ; how many bushels has he remaining ?
3. A boy purchased a box for 12 cents, and paid 6 cents for painting it ; how many cents did the box cost him ?
4. A man borrowed 18 dollars, and has paid 12 dollars of it ; how many dollars remain unpaid ?
5. Thomas paid 8 cents for a musk-melon, and 12 cents for a water-melon ; how many cents did the two melons cost him ?
6. Catharine had a present of 20 oranges, and gave 8 of them to her playmates ; how many has she left ?
7. A truckman paid 12 dollars for a load of hay, and 9 dollars for twenty bushels of oats ; how many dollars did he pay away ?
8. A man paid 21 dollars for a cow, and 9 dollars for four bundles of hay ; how much more did he pay for the cow than for the hay ?
9. A drover purchased five sheep for 12 dollars, and two calves for 10 dollars ; how many dollars did he pay for the whole ?
10. Caroline has performed 22 questions in arithmetic, and Frances has performed 12 questions ; how many more questions has Caroline performed than Frances ?
11. There are two pieces of cloth ; one of them measures 12 yards, and the other measures 11 yards. How many yards are there in the two pieces ?
12. A farmer picked 23 bushels of quinces, and has sold 8 bushels of them to one man, and 4 to another ; how many bushels has he remaining unsold ?
13. Harriet wrote 12 lines in her writing-book in the morning, and 12 lines more in the afternoon ; how many lines did she write during the day ?

LESSON LXV.

1 and 2 and 3 less 1 are how many?
 2 and 3 and 4 less 2 are how many?
 3 and 4 and 5 less 3 are how many?
 4 and 5 and 6 less 4 are how many?
 5 and 6 and 7 less 5 are how many?
 6 and 5 and 4 less 6 are how many?
 7 and 4 and 3 less 2 are how many?
 8 and 3 and 2 less 4 are how many?
 9 and 6 and 3 less 5 are how many?
 10 and 5 and 4 less 6 are how many?
 11 and 4 and 3 less 7 are how many?
 12 and 6 and 4 less 8 are how many?
 13 and 3 and 2 less 9 are how many?
 14 and 4 and 5 less 10 are how many?
 15 and 5 and 6 less 11 are how many?
 16 and 6 and 7 less 12 are how many?
 17 and 7 and 1 less 2 are how many?
 18 and 8 and 2 less 3 are how many?

LESSON LXVI.

19 and 9 and 3 less 4 are how many?
 20 and 10 and 4 less 5 are how many?
 21 and 11 and 5 less 6 are how many?
 22 and 12 and 6 less 7 are how many?
 23 and 2 and 3 less 8 are how many?
 24 and 3 and 4 less 9 are how many?
 25 and 5 and 6 less 10 are how many?
 26 and 6 and 4 less 11 are how many?
 27 and 7 and 5 less 12 are how many?
 28 and 8 and 6 less 4 are how many?
 29 and 9 and 10 less 5 are how many?
 30 and 10 and 5 less 6 are how many?
 10 and 20 and 30 less 40 are how many?
 20 and 20 and 30 less 50 are how many?
 30 and 30 and 20 less 60 are how many?
 40 and 40 and 10 less 70 are how many?
 50 and 50 and 20 less 80 are how many?
 60 and 60 and 10 less 90 are how many?

LESSON LXVII.

1. A grocer purchased 10 barrels of flour of A, 5 of B, and 3 of C, and has sold 6 barrels of it ; how many barrels has he remaining unsold ?
2. A farmer having 20 barrels of apples, sold 10 barrels to C, and 5 barrels to D ; how many barrels had he left ?
3. William purchased 24 peaches, and gave 8 of them to his sister, and 6 of them to his brother ; how many had he left ?
4. A trader borrowed 100 dollars, and paid 50 dollars at one time, and 30 dollars at another time ; how many dollars remain unpaid ?
5. A man bought a wagon for 45 dollars, and paid 5 dollars for painting it ; he then sold it for 55 dollars. How many dollars did he gain by trading ?
6. Mary bought a pair of gloves for 50 cents, a comb for 15 cents, and a paper of pins for 10 cents. She handed the clerk a dollar ; how much change ought she to receive ?
7. A jeweller bought a watch for 30 dollars, a chain for 15 dollars, and a key for 5 dollars, and sold them all for 60 dollars ; how many dollars did he gain by trading ?
8. A merchant, who had 60 barrels of flour, sold 20 barrels to one man, and 15 barrels to another ; how many barrels had he left ?
9. Jane had 20 cents, her father gave her 15 cents, and her mother gave her 10 cents. She then bought a book for 25 cents ; how many cents had she left ?
10. A farmer sold a cow for 20 dollars, a calf for 5 dollars, and a sheep for 3 dollars ; and in payment received a sleigh worth 18 dollars. How many dollars remain unpaid ?
11. A market-man paid 12 dollars for a firkin of butter, 10 dollars for five barrels of apples, and 3 dollars for a barrel of cranberries, and sold them all for 28 dollars ; how much was gained ?

LESSON LXVIII.

EXERCISES TO BE PERFORMED ON THE SLATE.

<i>Add</i>	4	9	10	3	8
<i>and</i>	5	8	11	4	7
<i>and</i>	6	7	12	5	6
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>From</i>	15	24	33	12	28
<i>Take</i>	11	13	22	7	13
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>Add</i>	5	10	11	6	11
<i>and</i>	6	9	12	7	10
<i>and</i>	7	8	8	8	9
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>From</i>	18	27	31	28	36
<i>Take</i>	7	10	11	15	24
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>Add</i>	5	6	4	9	7
<i>and</i>	4	7	5	8	8
<i>and</i>	3	8	6	3	9
<i>and</i>	2	9	7	2	10
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

<i>Add</i>	10	60	70	50	60
<i>and</i>	20	50	80	40	70
<i>and</i>	30	40	90	30	80
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON LXIX.

1. A man bought eighteen oranges for 54 cents, six lemons for 12 cents, and a melon for 10 cents; how many cents did he pay for all of them?
2. There is a mast, 5 feet of which is in the mud, 10 feet in the water, and 15 feet above the water; how long is the mast?
3. In a school 15 girls learn to write, 12 learn arithmetic, 10 learn grammar, 8 learn geography, and 6 learn history; how many girls are there in the school?
4. There is an orchard in which there are 50 apple-trees, 25 peach-trees, 15 pear-trees, and 10 plum-trees; how many trees are there in the orchard?
5. There is a school in which there are four classes. In the first class there are 15 boys, in the second 10, in the third 9, and in the fourth 8; how many boys are there in the school?
6. If you have 20 cents, and spend 8 of them for raisins and 6 for oranges, how many cents will you have left?
7. A man borrowed 30 dollars; at one time he paid 15 dollars, at another 10 dollars. How many dollars remain unpaid?
8. A man bought a horse for 60 dollars, and paid 5 dollars for keeping him, and sold him for 75 dollars; what number of dollars did he gain?
9. A man sold a horse for 120 dollars, which was 30 dollars more than he gave for him; what did he give for the horse?
10. A drover purchased 25 sheep of one man, 15 of another, 12 of another, and 10 of another; he has since sold 12 of them. How many has he left?
11. A boy bought a book for 50 cents, a slate for 25 cents, and a dozen pencils for 5 cents; he paid for them with a one dollar bank bill, which is equal to 100 cents. How many cents ought he to receive back in change?

LESSON LXX.

2 times 1 are 2	2 in 2 1 time.
2 times 2 are 4	2 in 4 2 times.
2 times 3 are 6	2 in 6 3 times.
2 times 4 are 8	2 in 8 4 times.
2 times 5 are 10	2 in 10 5 times.
2 times 6 are 12	2 in 12 6 times.
2 times 7 are 14	2 in 14 7 times.
2 times 8 are 16	2 in 16 8 times.
2 times 9 are 18	2 in 18 9 times.
2 times 10 are 20	2 in 20 10 times.
2 times 11 are 22	2 in 22 11 times.
2 times 12 are 24	2 in 24 12 times.

LESSON LXXI.

1 time 2 are how many?	What is 1 half of
2 times 2 are how many?	What is 1 half of
3 times 2 are how many?	What is 1 half of
4 times 2 are how many?	What is 1 half of
5 times 2 are how many?	What is 1 half of
6 times 2 are how many?	What is 1 half of
7 times 2 are how many?	What is 1 half of
8 times 2 are how many?	What is 1 half of
9 times 2 are how many?	What is 1 half of
10 times 2 are how many?	What is 1 half of
11 times 2 are how many?	What is 1 half of
12 times 2 are how many?	What is 1 half of

LESSON LXXII.

EXERCISES TO BE PERFORMED ON THE SLATE

Multiply 7 8 9 10 11
 by 2 2 2 2 2

Divide 14 *by* 2 16 *by* 2 18 *by* 2

* When any number is divided into two equal parts, each is called one *half* of the number.

LESSON LXXIII.

1. If you pay one cent for an apple, how many cents must you pay for 2 apples ?
2. If 2 peaches cost 2 cents, what will one peach cost ?
3. A little girl has 2 hands ; how many hands have 2 little girls ?
4. 2 little girls have 4 eyes ; how many eyes has one little girl ?
5. Mary has 3 picture-books, and Jane has 2 times as many ; how many picture-books has Jane ?
6. Jane has 6 pears, and Mary has only one half as many ; how many pears has Mary ?
7. If one yard of ribbon cost 4 cents, how many cents will 2 yards cost ?
8. If 2 oranges cost 8 cents, how many cents will one orange cost ?
9. If a quart of milk is worth 5 cents, how many cents are 2 quarts worth ?
10. If 2 quarts of milk are worth 10 cents, how many cents is one quart worth ?
11. If a loaf of bread is worth 6 cents, how many cents are 2 loaves worth ?
12. If you have 12 cents, how many loaves of bread can you buy with them at 6 cents each ?
13. What will 2 yards of cloth cost, at 7 dollars a yard ?
14. If 2 yards of cloth cost 14 dollars, what is one yard of it worth ?
15. Henry has 8 marbles, and James has 2 times as many ; how many marbles has James ?
16. William has 16 nuts, and Albert has only one half as many ; how many nuts has Albert ?
17. If a stage run 9 miles in an hour, how many miles will it run in 2 hours ?
18. How many hours will it take a man to travel 18 miles, if he travel 9 miles an hour ?
19. There are 10 dollars in a gold eagle ; how many dollars are there in 2 eagles ?
20. In 20 dollars, how many eagles are there of 10 dollars each ?

LESSON LXXIV.

3 times 1 are 3	3 in 3 1 time.
3 times 2 are 6	3 in 6 2 times.
3 times 3 are 9	3 in 9 3 times.
3 times 4 are 12	3 in 12 4 times.
3 times 5 are 15	3 in 15 5 times.
3 times 6 are 18	3 in 18 6 times.
3 times 7 are 21	3 in 21 7 times.
3 times 8 are 24	3 in 24 8 times.
3 times 9 are 27	3 in 27 9 times.
3 times 10 are 30	3 in 30 10 times.
3 times 11 are 33	3 in 33 11 times.
3 times 12 are 36	3 in 36 12 times.

LESSON LXXV.

1 time 3 are how many?	What is 1 third of
2 times 3 are how many?	What is 1 third of
3 times 3 are how many?	What is 1 third of
4 times 3 are how many?	What is 1 third of
5 times 3 are how many?	What is 1 third of
6 times 3 are how many?	What is 1 third of
7 times 3 are how many?	What is 1 third of
8 times 3 are how many?	What is 1 third of
9 times 3 are how many?	What is 1 third of
10 times 3 are how many?	What is 1 third of
11 times 3 are how many?	What is 1 third of
12 times 3 are how many?	What is 1 third of

LESSON LXXVI.

EXERCISES TO BE PERFORMED ON THE SLAT

$$\begin{array}{r}
 \text{Multiply } 7 \quad 8 \quad 9 \quad 10 \quad 11 \\
 \text{by } 3 \quad 3 \quad 3 \quad 3 \quad 3 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{Divide } 21 \text{ by } 3 \quad 27 \text{ by } 3 \quad 36 \text{ by } 3 \\
 \hline
 \hline
 \hline
 \end{array}$$

* When any number is divided into three equal part of the parts is called one third of the number.

LESSON LXXVII.

1. Sophia has one rose, and Maria has 3 times as many ; how many roses has Maria ?
2. Maria has 3 pinks, Sophia has only one third as many ; how many pinks has Sophia ?
3. In one quart there are 2 pints ; how many pints are there in 3 quarts ?
4. There are 2 pints in one quart ; how many quarts are there in 6 pints ?
5. There are 3 feet in one yard ; how many feet are there in 3 yards ?
6. In one yard there are 3 feet ; how many yards are there in 9 feet ?
7. There are 4 farthings in one penny ; how many farthings are there in 3 pence ?
8. In one penny there are 4 farthings ; how many pence are there in 12 farthings ?
9. If you recite 5 lessons each day, how many lessons will you recite in 3 days ?
10. Charles recited 15 lessons in 3 days ; how many lessons did he recite each day ?
11. There are 6 shillings in one dollar ; how many shillings are there in 3 dollars ?
12. In one dollar there are 6 shillings ; how many dollars are there in 18 shillings ?
13. If one yard of broadcloth cost 7 dollars, what will 3 yards cost ?
14. If 3 yards of broadcloth are worth 21 dollars, what is the value of one yard ?
15. If a quart of cherries be worth 8 cents, what are 3 quarts worth ?
16. If 3 quarts of cherries are worth 24 cents, how many cents is one quart worth ?
17. If a pound of raisins cost 9 cents, how many cents will 3 pounds cost ?
18. If 3 pounds of raisins are worth 27 cents, what is the value of one pound ?
19. If a writing-book cost 10 cents, how many cents will 3 writing-books cost ?

LESSON LXXVIII.

4 times 1 are 4	4 in 4 1 time.
4 times 2 are 8	4 in 8 2 times.
4 times 3 are 12	4 in 12 3 times.
4 times 4 are 16	4 in 16 4 times.
4 times 5 are 20	4 in 20 5 times.
4 times 6 are 24	4 in 24 6 times.
4 times 7 are 28	4 in 28 7 times.
4 times 8 are 32	4 in 32 8 times.
4 times 9 are 36	4 in 36 9 times.
4 times 10 are 40	4 in 40 10 times.
4 times 11 are 44	4 in 44 11 times.
4 times 12 are 48	4 in 48 12 times.

LESSON LXXIX.

1 time 4 are how many?	What is 1 fourth of 4?*
2 times 4 are how many?	What is 1 fourth of 8?
3 times 4 are how many?	What is 1 fourth of 12?
4 times 4 are how many?	What is 1 fourth of 16?
5 times 4 are how many?	What is 1 fourth of 20?
6 times 4 are how many?	What is 1 fourth of 24?
7 times 4 are how many?	What is 1 fourth of 28?
8 times 4 are how many?	What is 1 fourth of 32?
9 times 4 are how many?	What is 1 fourth of 36?
10 times 4 are how many?	What is 1 fourth of 40?
11 times 4 are how many?	What is 1 fourth of 44?
12 times 4 are how many?	What is 1 fourth of 48?

LESSON LXXX.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
 by 4 4 4 4 4 4
 — — — — — —

Divide 28 by 4 44 by 4 48 by 4
 — — —

* When any number is divided into four equal parts, each of the parts is called one fourth of the number.

LESSON LXXXI.

1. Caroline writes one page of her writing-book in a day ; how many pages does she write in 4 days ?
2. Caroline has written 4 pages of her writing-book in 4 days ; how many pages has she written each day ?
3. A bird has 2 wings ; how many wings have 4 birds ?
4. How many pears, at 2 cents a-piece, can you buy with 8 cents ?
5. How many cents will 4 oranges cost, at 3 cents a-piece ?
6. If 4 oranges cost 12 cents, how many cents does one orange cost ?
7. There are 4 quarts in one gallon ; how many quarts are there in 4 gallons ?
8. 4 quarts are equal to one gallon ; how many gallons are there in 16 quarts ?
9. There are 5 quarters in an English ell ; how many quarters are there in 4 ells ?
10. In an English ell there are 5 quarters ; how many ells are there in 20 quarters ?
11. There are 6 feet in one fathom ; how many feet are there in 4 fathoms ?
12. In one fathom there are 6 feet ; how many fathoms are there in 24 feet ?
13. If one barrel of flour is worth 7 dollars, how many dollars are 4 barrels worth ?
14. How many barrels of flour can you buy with 28 dollars, at 7 dollars a barrel ?
15. What will 4 pounds of sugar come to, at 8 cents a pound ?
16. How many pounds of beef can you purchase with 32 cents, at 8 cents a pound ?
17. Thomas has 9 cents, and John has 4 times as many ; how many cents has John ?
18. John has 36 nuts ; Thomas has only one fourth as many. How many nuts has Thomas ?
19. If a pound of cheese is worth 10 cents, what is the value of 4 pounds ?

LESSON LXXXII.

5 times 1 are 5	5 in 5 1 time.
5 times 2 are 10	5 in 10 2 times.
5 times 3 are 15	5 in 15 3 times.
5 times 4 are 20	5 in 20 4 times.
5 times 5 are 25	5 in 25 5 times.
5 times 6 are 30	5 in 30 6 times.
5 times 7 are 35	5 in 35 7 times.
5 times 8 are 40	5 in 40 8 times.
5 times 9 are 45	5 in 45 9 times.
5 times 10 are 50	5 in 50 10 times.
5 times 11 are 55	5 in 55 11 times.
5 times 12 are 60	5 in 60 12 times.

LESSON LXXXIII.

1 time 5 are how many?	What is 1 fifth of 5?*
2 times 5 are how many?	What is 1 fifth of 10?
3 times 5 are how many?	What is 1 fifth of 15?
4 times 5 are how many?	What is 1 fifth of 20?
5 times 5 are how many?	What is 1 fifth of 25?
6 times 5 are how many?	What is 1 fifth of 30?
7 times 5 are how many?	What is 1 fifth of 35?
8 times 5 are how many?	What is 1 fifth of 40?
9 times 5 are how many?	What is 1 fifth of 45?
10 times 5 are how many?	What is 1 fifth of 50?
11 times 5 are how many?	What is 1 fifth of 55?
12 times 5 are how many?	What is 1 fifth of 60?

LESSON LXXXIV.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
 by 5 5 5 5 5 5
 — — — — — —

Divide 35 by 5 40 by 5 55 by 5
 — — —

* When any number is divided into five equal parts, each of the parts is called one fifth of the number.

LESSON LXXXV.

1. If Maria walks one mile each morning, how many miles will she have walked in 5 mornings?
2. Maria has walked 5 miles in 5 mornings; how many miles did she walk each morning?
3. A cow has 2 horns; how many horns have 5 cows?
4. William has 10 apples; Henry has only one fifth as many. How many apples has Henry?
5. If the postage on a letter is 3 cents, what will be the postage on 5 letters?
6. In one yard there are 3 feet; how many yards are there in 15 feet?
7. There are 4 quarters in one yard; how many quarters are there in 5 yards?
8. There are 4 quarts in one gallon; how many gallons are there in 20 quarts?
9. If a skein of silk is worth 5 cents, what is the value of 5 skeins?
10. How many skeins of silk can you purchase with 25 cents, at 5 cents a skein?
11. If a barrel of flour cost 6 dollars, how many dollars will 5 barrels cost?
12. If 5 yards of broadcloth are worth 30 dollars, how many dollars is one yard worth?
13. There are 7 days in a week; how many days are there in 5 weeks?
14. In one week there are 7 days; how many weeks are there in 35 days?
15. There are 8 gills in one quart; how many gills are there in 5 quarts?
16. In one quart there are 8 gills; how many quarts are there in 40 gills?
17. If one apple-tree bears 9 bushels of apples, how many bushels will 5 trees bear?
18. A farmer picked 45 bushels of apples from 5 trees; how many bushels were picked from each tree?
19. If a girl perform 10 questions in arithmetic in one day, how many will she perform in 5 days?

LESSON LXXXVI.

6 times 1 are 6	6 in 6 1 time.
6 times 2 are 12	6 in 12 2 times.
6 times 3 are 18	6 in 18 3 times.
6 times 4 are 24	6 in 24 4 times.
6 times 5 are 30	6 in 30 5 times.
6 times 6 are 36	6 in 36 6 times.
6 times 7 are 42	6 in 42 7 times.
6 times 8 are 48	6 in 48 8 times.
6 times 9 are 54	6 in 54 9 times.
6 times 10 are 60	6 in 60 10 times.
6 times 11 are 66	6 in 66 11 times.
6 times 12 are 72	6 in 72 12 times.

LESSON LXXXVII.

1 time 6 are how many?	What is 1 sixth of 6?*
2 times 6 are how many?	What is 1 sixth of 12?
3 times 6 are how many?	What is 1 sixth of 18?
4 times 6 are how many?	What is 1 sixth of 24?
5 times 6 are how many?	What is 1 sixth of 30?
6 times 6 are how many?	What is 1 sixth of 36?
7 times 6 are how many?	What is 1 sixth of 42?
8 times 6 are how many?	What is 1 sixth of 48?
9 times 6 are how many?	What is 1 sixth of 54?
10 times 6 are how many?	What is 1 sixth of 60?
11 times 6 are how many?	What is 1 sixth of 66?
12 times 6 are how many?	What is 1 sixth of 72?

LESSON LXXXVIII.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
 by 6 6 6 6 6 6
 — — — — — —

Divide 48 by 6 66 by 6 72 by 6
 — — —

* When any number is divided into six equal parts, each of the parts is called one sixth of the number.

LESSON LXXXIX.

1. If a tailoress can make one vest in a day, how many can she make in 6 days?
2. If a tailoress can make 6 vests in 6 days, how many can she make in one day?
3. If Mary writes 2 copies each day, how many will she write in 6 days?
4. Julia has written 12 pages in 6 days; how many pages has she written each day?
5. If you give 6 girls 3 apples each, how many apples do you give away?
6. If 18 peaches be equally divided among 6 boys, how many will each boy have?
7. If you should buy 6 oranges, and pay 4 cents a-piece for them, how many cents would the oranges cost?
8. If you pay 24 cents for 6 yards of tape, how many cents is one yard of it worth?
9. William has 5 cents, and James has 6 times as many; how many cents has James?
10. If 30 cents be put into 6 equal piles, how many cents will there be in each pile?
11. What will 6 lead-pencils cost, at 6 cents a-piece?
12. If one yard of cloth is worth 6 dollars, how many yards can you purchase with 36 dollars?
13. If a girl can make 7 palm-leaf hats in a week, how many can she make in 6 weeks?
14. A cabinet-maker sold 7 tables for 42 dollars; how many dollars did he get for each of them?
15. There are 8 pints in one gallon; how many pints are there in 6 gallons?
16. In one gallon there are 8 pints; how many gallons are there in 48 pints?
17. If a yard of cloth is worth 9 cents, what are 6 yards of it worth?
18. A girl paid 54 cents for 6 yards of calico; how many cents did she pay for each yard?
19. If one pound of beef is worth 12 cents, what is the value of 6 pounds?

LESSON XC.

7 times 1 are 7	7 in 7 1 time.
7 times 2 are 14	7 in 14 2 times.
7 times 3 are 21	7 in 21 3 times.
7 times 4 are 28	7 in 28 4 times.
7 times 5 are 35	7 in 35 5 times.
7 times 6 are 42	7 in 42 6 times.
7 times 7 are 49	7 in 49 7 times.
7 times 8 are 56	7 in 56 8 times.
7 times 9 are 63	7 in 63 9 times.
7 times 10 are 70	7 in 70 10 times.
7 times 11 are 77	7 in 77 11 times.
7 times 12 are 84	7 in 84 12 times.

LESSON XCI.

1 time 7 are how many?	What is 1 seventh of 7?*
2 times 7 are how many?	What is 1 seventh of 14?
3 times 7 are how many?	What is 1 seventh of 21?
4 times 7 are how many?	What is 1 seventh of 28?
5 times 7 are how many?	What is 1 seventh of 35?
6 times 7 are how many?	What is 1 seventh of 42?
7 times 7 are how many?	What is 1 seventh of 49?
8 times 7 are how many?	What is 1 seventh of 56?
9 times 7 are how many?	What is 1 seventh of 63?
10 times 7 are how many?	What is 1 seventh of 70?
11 times 7 are how many?	What is 1 seventh of 77?
12 times 7 are how many?	What is 1 seventh of 84?

LESSON XCII.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
 by 7 7 7 7 7 7

Divide 63 by 7 77 by 7 84 by 7

* When any number is divided into seven equal parts, each of the parts is called one seventh of the number.

LESSON XCIII.

1. If one gallon of wine cost 2 dollars, what will 7 gallons cost ?
2. A man paid 14 dollars for 7 sheep ; how many dollars did each sheep cost him ?
3. If one biscuit cost 3 cents, what will 7 biscuits cost ?
4. At 3 cents a-piece, how many biscuits can you purchase with 21 cents ?
5. There are 4 weeks in one month ; how many weeks are there in 7 months ?
6. In one month there are 4 weeks ; how many months are there in 28 weeks ?
7. If a man earn 5 dollars in one day, how many dollars can he earn in 7 days ?
8. If a man's expenses be 35 dollars a week, how much is that a day ?
9. There are 7 boys, and each boy has 6 cents ; how many cents have all of them ?
0. If you divide 42 nuts equally among 7 boys, how many nuts will each boy receive ?
1. If a boy earn 7 dollars in one month, how many dollars can he earn in 7 months ?
2. A boy received 49 dollars for 7 months' labor ; how many dollars did he receive for each month's labor ?
3. There are 8 quarts in one peck ; how many quarts are there in 7 pecks ?
4. In one peck there are 8 quarts ; how many pecks are there in 56 quarts ?
5. William has 9 cents, and Henry has 7 times as many ; how many cents has Henry ?
6. Henry has 63 cents, and William has only one seventh as many ; how many cents has William ?
7. If you can learn 10 questions in an hour, how many questions can you learn in 7 hours ?
8. If you are required to learn 70 questions in arithmetic, and wish to learn them all in 7 hours, how many of them must you learn each hour ?
9. In one shilling there are 12 pence ; how many pence are there in 7 shillings ?

LESSON XCIV.

8 times 1 are 8	8 in 8 1 time.
8 times 2 are 16	8 in 16 2 times.
8 times 3 are 24	8 in 24 3 times.
8 times 4 are 32	8 in 32 4 times.
8 times 5 are 40	8 in 40 5 times.
8 times 6 are 48	8 in 48 6 times.
8 times 7 are 56	8 in 56 7 times.
8 times 8 are 64	8 in 64 8 times.
8 times 9 are 72	8 in 72 9 times.
8 times 10 are 80	8 in 80 10 times.
8 times 11 are 88	8 in 88 11 times.
8 times 12 are 96	8 in 96 12 times.

LESSON XCV.

1 time 8 are how many?	What is 1 eighth of 8?*
2 times 8 are how many?	What is 1 eighth of 16?
3 times 8 are how many?	What is 1 eighth of 24?
4 times 8 are how many?	What is 1 eighth of 32?
5 times 8 are how many?	What is 1 eighth of 40?
6 times 8 are how many?	What is 1 eighth of 48?
7 times 8 are how many?	What is 1 eighth of 56?
8 times 8 are how many?	What is 1 eighth of 64?
9 times 8 are how many?	What is 1 eighth of 72?
10 times 8 are how many?	What is 1 eighth of 80?
11 times 8 are how many?	What is 1 eighth of 88?
12 times 8 are how many?	What is 1 eighth of 96?

LESSON XCVI.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
by 8 8 8 8 8 8

Divide 56 by 8 88 by 8 96 by 8

* When any number is divided into eight equal parts, each of the parts is called one eighth of the number.

LESSON XCVII.

1. A man purchased 8 barrels of apples, at 2 dollars a barrel; how many dollars did the 8 barrels cost him?
2. How many pears can you buy with 16 cents, at 2 cents a-piece?
3. What will 8 barrels of cider cost, at 3 dollars a barrel?
4. How many oranges can you buy with 24 cents, at 3 cents a-piece?
5. Francis has 4 marbles, and John has 8 times as many; how many marbles has John?
6. If 32 marbles be equally divided among 8 boys, how many marbles will each boy receive?
7. What will 8 weeks' board come to, at 5 dollars a week?
8. How many yards of cloth can you purchase with 40 dollars, at 5 dollars a yard?
9. A man has 8 children, and gives 6 dollars to each of them; how many dollars does he give away?
10. A mother distributed 48 peaches equally among her 8 children; how many did she give them a-piece?
11. In one week there are 7 days; how many days are there in 8 weeks?
12. There are 7 days in one week; how many weeks are there in 56 days?
13. If a man can earn 8 dollars in one week, how many dollars can he earn in 8 weeks?
14. If 64 boys be divided into classes, containing 8 boys each, how many classes would there be?
15. If a vessel sail 9 miles in an hour, how many miles will she sail in 8 hours?
16. How many hours will it take a man to travel 72 miles, if he travels 9 miles in an hour?
17. There are 10 cents in one dime; how many cents are there in 8 dimes?
18. In one dime there are 10 cents; how many dimes are there in 80 cents?
19. If one ton of hay is worth 11 dollars, what are 8 tons worth?

LESSON XCVIII.

9 times 1 are	9	9 in 9	1 time.
9 times 2 are	18	9 in 18	2 times.
9 times 3 are	27	9 in 27	3 times.
9 times 4 are	36	9 in 36	4 times.
9 times 5 are	45	9 in 45	5 times.
9 times 6 are	54	9 in 54	6 times.
9 times 7 are	63	9 in 63	7 times.
9 times 8 are	72	9 in 72	8 times.
9 times 9 are	81	9 in 81	9 times.
9 times 10 are	90	9 in 90	10 times.
9 times 11 are	99	9 in 99	11 times.
9 times 12 are	108	9 in 108	12 times.

LESSON XCIX.

1 time 9 are how many?	What is 1 ninth of 9?*
2 times 9 are how many?	What is 1 ninth of 18?
3 times 9 are how many?	What is 1 ninth of 27?
4 times 9 are how many?	What is 1 ninth of 36?
5 times 9 are how many?	What is 1 ninth of 45?
6 times 9 are how many?	What is 1 ninth of 54?
7 times 9 are how many?	What is 1 ninth of 63?
8 times 9 are how many?	What is 1 ninth of 72?
9 times 9 are how many?	What is 1 ninth of 81?
10 times 9 are how many?	What is 1 ninth of 90?
11 times 9 are how many?	What is 1 ninth of 99?
12 times 9 are how many?	What is 1 ninth of 108?

LESSON C.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
 by 9 9 9 9 9 9

Divide 72 *by* 9 99 *by* 9 108 *by* 9

* When any number is divided into nine equal parts, each of the parts is called one ninth of the number.

LESSON CI.

1. What will 9 yards of cloth cost, at 2 dollars a yard?
2. How many barrels of apples can you buy with 18 dollars, at 2 dollars a barrel?
3. There are 3 miles in one league; how many miles are there in 9 leagues?
4. In one league there are 3 miles; how many leagues are there in 27 miles?
5. In one yard there are 4 quarters; how many quarters are there in 9 yards?
6. How many yards are there in 36 quarters of a yard?
7. If a quart of milk cost 5 cents, how many cents will 9 quarts cost?
8. How many quarts of milk can you buy with 45 cents, at 5 cents a quart?
9. If one book cost 6 cents, what will 9 books cost?
10. If you pay 54 cents for 9 books, how many cents do you pay for each book?
11. How much will 9 yards of ribbon cost, at 7 cents a yard?
12. If a stage runs 63 miles in 9 hours, how many miles does it run each hour?
3. If a man earn 8 dollars in one week, how many dollars can he earn in 9 weeks?
4. A man received 72 dollars for 9 weeks' work; how many dollars did he receive for each week's work?
5. What will 9 pounds of sugar come to, at 9 cents a pound?
6. If 81 cents be equally divided among 9 boys, how many cents will each boy receive?
7. If one pound of coffee cost 10 cents, how many cents will 9 pounds cost?
8. How many writing-books, at 10 cents each, can you buy with 90 cents?
9. If 11 men can do a piece of work in 9 days, how many men will be required to do the same work in one day?
10. If 99 nuts be equally distributed among 9 boys, how many nuts will each boy receive?

LESSON CII.

10 times 1 are	10	10 in 10	1
10 times 2 are	20	10 in 20	2
10 times 3 are	30	10 in 30	3
10 times 4 are	40	10 in 40	4
10 times 5 are	50	10 in 50	5
10 times 6 are	60	10 in 60	6
10 times 7 are	70	10 in 70	7
10 times 8 are	80	10 in 80	8
10 times 9 are	90	10 in 90	9
10 times 10 are	100	10 in 100	10
10 times 11 are	110	10 in 110	11
10 times 12 are	120	10 in 120	12

LESSON CIII.

1 time 10 are how many?	What is 1 tent
2 times 10 are how many?	What is 1 tent
3 times 10 are how many?	What is 1 tent
4 times 10 are how many?	What is 1 tent
5 times 10 are how many?	What is 1 tent
6 times 10 are how many?	What is 1 tent
7 times 10 are how many?	What is 1 tent
8 times 10 are how many?	What is 1 tent
9 times 10 are how many?	What is 1 tent
10 times 10 are how many?	What is 1 tent
11 times 10 are how many?	What is 1 tent
12 times 10 are how many?	What is 1 tent

LESSON CIV.

EXERCISES TO BE PERFORMED ON THE

Multiply 7 8 9 10 1
 by 10 10 10 10 1

Divide 70 by 10 90 by 10 120

* When any number is divided into ten equal of the parts is called one tenth of the number.

LESSON CV.

1. If one lemon is worth 2 cents, what are 10 lemons worth ?
2. How many peaches can you buy with 20 cents, at 2 cents a-piece ?
3. If you give 10 boys 3 apples each, how many apples will you give to all of them ?
4. If 30 roses be equally divided among 10 girls, how many roses will each girl receive ?
5. Susan is 4 years old, which is one tenth the age of her mother ; how old is her mother ?
6. Mrs. Williams is 40 years old ; her daughter Susan is only one tenth the age of her mother. How old is Susan ?
7. If one lead-pencil is worth 5 cents, what are 10 pencils worth ?
8. How many yards of broadcloth can you purchase with 50 dollars, at 5 dollars a yard ?
9. If you pay 6 cents for riding one mile, how many cents must you pay for riding 10 miles ?
10. Mary paid 60 cents for 10 yards of ribbon ; how many cents did she pay for each yard ?
11. What will 10 pounds of figs come to, at 7 cents a pound ?
12. Bought 10 pounds of sugar for 70 cents ; what is one pound of it worth ?
13. There are 8 pints in one gallon ; how many pints are there in 10 gallons ?
14. 8 pints are equal to one gallon ; 80 pints are equal to how many gallons ?
15. If a man earn 9 dollars in one week, how many dollars can he earn in 10 weeks ?
16. If 90 dollars be equally divided among 10 men, how many dollars will each man receive ?
17. In a school there are 10 classes ; in each class there are 10 girls. How many girls are there in the school ?
18. In a school of 100 boys there are 10 divisions ; each division contains the same number of boys. How many boys are there in each division ?

LESSON CVI.

11 times 1 are 11	11 in 11 1 time.
11 times 2 are 22	11 in 22 2 times.
11 times 3 are 33	11 in 33 3 times.
11 times 4 are 44	11 in 44 4 times.
11 times 5 are 55	11 in 55 5 times.
11 times 6 are 66	11 in 66 6 times.
11 times 7 are 77	11 in 77 7 times.
11 times 8 are 88	11 in 88 8 times.
11 times 9 are 99	11 in 99 9 times.
11 times 10 are 110	11 in 110 10 times.
11 times 11 are 121	11 in 121 11 times.
11 times 12 are 132	11 in 132 12 times.

LESSON CVII.

1 time 11 are how many?	What is 1 eleventh of 11?
2 times 11 are how many?	What is 1 eleventh of 22?
3 times 11 are how many?	What is 1 eleventh of 33?
4 times 11 are how many?	What is 1 eleventh of 44?
5 times 11 are how many?	What is 1 eleventh of 55?
6 times 11 are how many?	What is 1 eleventh of 66?
7 times 11 are how many?	What is 1 eleventh of 77?
8 times 11 are how many?	What is 1 eleventh of 88?
9 times 11 are how many?	What is 1 eleventh of 99?
10 times 11 are how many?	What is 1 eleventh of 110?
11 times 11 are how many?	What is 1 eleventh of 121?
12 times 11 are how many?	What is 1 eleventh of 132?

LESSON CVIII.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
by 11 11 11 11 11 11

Divide 88 *by* 11 99 *by* 11 132 *by* 11

* When any number is divided into *eleven* equal parts, each *the parts* is called *one eleventh* of the number.

LESSON CIX.

1. Lucy bought 2 yards of ribbon, at 11 cents a yard, how many cents did she pay for it?
2. If 2 barrels of beef cost 22 dollars, what is one barrel of it worth?
3. There are 11 half-yards in one rod; how many half-yards are there in 3 rods?
4. Emily paid 33 cents for 3 yards of silk braid; how many cents did it cost per yard?
5. If one book cost 11 cents, how many cents would 4 books cost?
6. If 4 loads of hay can be purchased for 44 dollars, what would one load of it cost?
7. What will 5 pounds of cheese come to, at 11 cents a pound?
8. If 55 nuts be equally divided among 3 boys and 2 girls, how many nuts will each of them receive?
9. There are 6 shillings in one dollar; how many shillings are there in 11 dollars?
10. A lady paid 66 shillings for a piece of silk measuring 11 yards; what did each yard of it cost?
11. In one week there are 7 days; how many days are there in 11 weeks?
12. If 77 acres of land should be divided into 11 equal parts, how many acres would each part contain?
13. If one ounce of nutmegs cost 11 cents, what will 8 ounces cost?
14. A farmer purchased 11 pounds of sugar, for which he paid 88 cents; what did it cost him per pound?
15. If 11 men can perform a piece of work in 9 days, how many men would be required to perform the same in one day?
16. If 99 men can perform a piece of work in one day, how many men would be required to perform the same in 11 days?
17. There are 10 cents in one dime; how many cents are there in 11 dimes?
18. How many pounds of coffee can you purchase with 110 cents, at 11 cents a pound?

LESSON CX.

12 times 1 are 12	12 in 12 1 time.
12 times 2 are 24	12 in 24 2 times.
12 times 3 are 36	12 in 36 3 times.
12 times 4 are 48	12 in 48 4 times.
12 times 5 are 60	12 in 60 5 times.
12 times 6 are 72	12 in 72 6 times.
12 times 7 are 84	12 in 84 7 times.
12 times 8 are 96	12 in 96 8 times.
12 times 9 are 108	12 in 108 9 times.
12 times 10 are 120	12 in 120 10 times.
12 times 11 are 132	12 in 132 11 times.
12 times 12 are 144	12 in 144 12 times.

LESSON CXI.

1 time 12 are how many?	What is 1 twelfth of 12?*
2 times 12 are how many?	What is 1 twelfth of 24?
3 times 12 are how many?	What is 1 twelfth of 36?
4 times 12 are how many?	What is 1 twelfth of 48?
5 times 12 are how many?	What is 1 twelfth of 60?
6 times 12 are how many?	What is 1 twelfth of 72?
7 times 12 are how many?	What is 1 twelfth of 84?
8 times 12 are how many?	What is 1 twelfth of 96?
9 times 12 are how many?	What is 1 twelfth of 108?
10 times 12 are how many?	What is 1 twelfth of 120?
11 times 12 are how many?	What is 1 twelfth of 132?
12 times 12 are how many?	What is 1 twelfth of 144?

LESSON CXII.

EXERCISES TO BE PERFORMED ON THE SLATE.

Multiply 7 8 9 10 11 12
 by 12 12 12 12 12 12

Divide 84 *by* 12 96 *by* 12 144 *by* 12

* When any number is divided into *twelve* equal parts, each of the parts is called one *twelfth* of the number.

LESSON CXIII.

1. If one pair of shoes are worth 2 dollars, what are 12 pairs worth?
2. Bought 12 pairs of shoes, for which I paid 24 dollars; how much did the shoes cost per pair?
3. One yard is equal to 3 feet; how many feet are there in 12 yards?
4. A grocer sold 3 pounds of raisins for 36 cents; what was the price per pound?
5. A half-dime is equal to 5 cents; 12 half-dimes are equal to how many cents?
6. 5 dollars are equal to one half-eagle; 60 dollars are equal to how many half-eagles?
7. There are 6 shillings in one dollar; how many shillings are there in 12 dollars?
8. A boy placed 72 cents in 6 equal piles; how many cents did he place in each pile?
9. Henry has 7 cents, and Samuel has 12 times as many; how many has Samuel?
10. A drover purchased 12 sheep, for which he paid 84 dollars; what did each sheep cost?
11. What will 12 cords of wood come to, at 8 dollars a cord?
12. In one year there are 12 months; how many years are there in 96 months?
13. When sugar is worth 9 cents a pound, what must be paid for 12 pounds?
14. There are 12 pence in one shilling; how many shillings are there in 108 pence?
15. When eggs are worth 12 cents per dozen, what must be paid for 10 dozen?
16. 12 eggs are called a dozen; 120 eggs are equal to how many dozen?
17. A lady purchased 12 yards of cambric, for which she paid 11 cents a yard; what did she pay for the 12 yards?
18. A man purchased 12 tons of coal, for which he paid 132 dollars; what did it cost him per ton?

LESSON CXIV.

MULTIPLICATION AND DIVISION COMBINED.

1. 3 times 4 are how many times 2?

Solution. — 3 times 4 are 12; and 2 is contained in 12 6 times. Therefore, 3 times 4 are 6 times 2.

2. 3 times 8 are how many times 4? 6?
3. 3 times 10 are how many times 5? 6?
4. 3 times 12 are how many times 6? 9?
5. 4 times 6 are how many times 8? 3?
6. 4 times 5 are how many times 10? 2?
7. 4 times 10 are how many times 3? 8?
8. 4 times 9 are how many times 12? 6?
9. 5 times 6 are how many times 10? 3?
10. 5 times 8 are how many times 4? 10?
11. 6 times 3 are how many times 9? 2?
12. 6 times 6 are how many times 4? 9?
13. 6 times 8 are how many times 12? 4?
14. 7 times 10 are how many times 5? 10?
15. 8 times 3 are how many times 6? 12?
16. 8 times 9 are how many times 12? 6?
17. 8 times 10 are how many times 5? 10?
18. 8 times 12 are how many times 6? 12?
19. 9 times 2 are how many times 6? 3?
20. 9 times 8 are how many times 12? 6?
21. 9 times 10 are how many times 5? 10?
22. 9 times 12 are how many times 6? 12?
23. 10 times 2 are how many times 4? 5?
24. 10 times 3 are how many times 5? 10?
25. 10 times 4 are how many times 8? 5?
26. 10 times 6 are how many times 12? 6?
27. 10 times 9 are how many times 6? 9?
28. 11 times 6 are how many times 3? 6?
29. 11 times 8 are how many times 4? 8?
30. 11 times 10 are how many times 5? 10?
31. 11 times 12 are how many times 6? 12?
32. 12 times 3 are how many times 4? 9?
33. 12 times 4 are how many times 8? 4?
34. 12 times 6 are how many times 9? 8?

LESSON CXV.

PRACTICAL QUESTIONS COMBINING MULTIPLICATION
AND DIVISION.

1. If 2 oranges cost 4 cents, what will 3 oranges cost ?
Solution. — If 2 oranges cost 4 cents, 1 orange will cost one half of 4 cents, which is 2 cents. If 1 orange cost 2 cents, 3 oranges will cost three times 2 cents, which are 6 cents ; therefore, 3 oranges will cost 6 cents.
2. If 3 melons cost 24 cents, how many cents will 4 melons cost ?
3. If 4 peaches cost 8 cents, what will 6 peaches cost ?
4. If 5 pine-apples cost 60 cents, how many cents will 8 pine-apples cost ?
5. If 6 pears cost 18 cents, what will 10 pears cost ?
6. If 7 slates cost 70 cents, how many cents will 12 slates cost ?
7. If 8 quarts of milk cost 40 cents, what will 12 quarts cost ?
8. If 9 quarts of strawberries cost 108 cents, how many cents will 12 quarts cost ?
9. If 10 dozen eggs cost 120 cents, what will 12 dozen eggs cost ?
10. If 4 sheep cost 12 dollars, how many dollars will 9 sheep cost ?
11. If 5 calves cost 30 dollars, how many dollars will 8 calves cost ?
12. If 6 men cut 18 cords of wood in one day, how many cords will 10 men cut in the same time ?
13. If 6 men can do a piece of work in 5 days, in how many days can 5 men do the same work ?
14. How many men will it take to do as much work in 6 days as 4 men can do in 12 days ?
15. How many days will it take 5 men to accomplish what it takes 6 men 10 days to perform ?
16. In how many days can 12 men earn as much as 9 men can earn in 8 days ?

LESSON CXVI.

1. If 2 barrels of flour cost 10 dollars, what will 5 barrels cost ?
2. 10 is 2 fifths of what number ?
3. If 4 yards of cloth cost 40 cents, what will 9 yards cost ?
4. 90 is 9 times 1 fourth of what number ?
5. If 5 books cost 60 cents, what will 12 books cost ?
6. 60 is 5 twelfths of what number ?
7. 144 is 12 times 1 fifth of what number ?
8. If 6 lead-pencils cost 36 cents, what will 11 lead-pencils cost ?
9. 36 is 6 elevenths of what number ?
10. 66 is 11 times 1 sixth of what number ?
11. If 7 quarts of cherries are worth 56 cents, what are 10 quarts worth ?
12. 56 is 7 tenths of what number ?
13. 80 is 10 times 1 eighth of what number ?
14. If 8 boxes of strawberries are worth 160 cents, what are 12 boxes worth ?
15. 160 is 8 twelfths of what number ?
16. 240 is 12 times 1 eighth of what number ?
17. If 9 pears are worth 27 cents, what are 5 of them worth ?
18. 27 is 9 times 1 fifth of what number ?
19. 15 is 5 ninths of what number ?
20. If a turkey weighing 10 pounds cost 120 cents, what will a turkey weighing 7 pounds cost ?
21. 120 is 10 times 1 seventh of what number ?
22. 84 is 7 tenths of what number ?
23. William says to Henry, who is 10 years old, your age is 1 eighth of 4 times my age ; how old is William ?
24. 10 is 1 eighth of 4 times what number ?
25. 80 is 8 times 1 fourth of what number ?
26. A lady being asked her age, answered, that her youngest daughter was 12 years old, which was 1 twelfth of 3 times her own age ; what was the lady's age ?
27. 144 is 12 times 1 fourth of what number ?
28. 48 is 1 third of twelve times what number ?

LESSON CXVII.

ADDITION.

ADDITION is the method of finding the total number of units contained in two or more numbers, and expressing them in one number, called the *amount*, or *sum*.

Illustration. — A man has three bags of money. No. 1 contains 950 dollars; No. 2 contains 875 dollars; No. 3 contains 764 dollars. What is the total amount or sum of money in the three bags?

Hunda.	Tens.	Units.
9	5	0
8	7	5
7	6	4

Ans. 2,589 dolls.

We begin at the bottom of the column of *units*, and add all the figures in that column, and find the sum of them to be 9 *units*, which we write under the column of *units*. We then add all the figures in the column of *tens*, and find the sum of them to be 18 *tens*, or 1 *hundred*, and 8 *tens*; we write the 8 (*tens*) under the column of *tens*, and then add the 1 (*hundred*) with the figures in the column of *hundreds*, and find the sum of them to be 25 *hundred*, or 2 *thousand*, and 5 *hundred*; we write the 5 (*hundred*) under the column of *hundreds*, and the 2 (*thousand*) at the left of the 5 *hundred*; and find the whole amount or sum of money in the three bags to be 2,589 dollars.

From the above illustration, we obtain the following

RULE. — Write the numbers, placing *units* under *units*, *tens* under *tens*, *hundreds* under *hundreds*, and draw a line under them.

Begin at the bottom of the column of *units*, and add all the figures in that column in succession: if the amount does not exceed nine, write it under the column; if the amount exceeds nine, write the right-hand figure of it under the column, and add the left-hand figure, or figures, with the figures in the next column.

Add the figures in each succeeding column in the same manner, and write down the whole amount of the last column.

LESSON CXVIII.

EXERCISES TO BE PERFORMED ON THE SLATE.

(1.)	(2.)	(3.)	(4.)
123	567	222	666
234	678	333	777
355	789	444	888
466	912	555	999
<hr/>			
(5.)	(6.)	(7.)	(8.)
1,234	2,345	3,456	4,444
5,678	5,432	4,444	5,555
9,123	3,456	5,656	6,666
4,567	6,543	6,767	7,777
8,934	4,567	7,878	8,888
<hr/>			
(9.)	(10.)	(11.)	(12.)
11,111	23,232	22,333	34,435
22,222	34,343	33,444	45,546
33,333	45,454	44,555	56,654
44,444	56,565	55,666	67,765
55,555	67,676	66,777	78,786
66,666	78,787	77,888	89,987

Two short parallel lines (=) indicate equality: thus 1 dollar = 100 cents; which is read, 1 dollar is equal to 100 cents.

This cross (+) indicates addition: thus, $5 + 7 = 12$ which is read, 5 plus 7 equal 12, or 5 and 7 equal 12.

13. What is the sum of $5,665 + 6,545 + 7,546$.
8,564?

14. What is the sum of $23,456 + 34,567 + 45,678$.
56,789?

15. What is the sum of $40,405 + 50,604 + 60,708$.
70,910?

16. What is the sum of $75,704 + 85,406 + 95,115$.
48,412?

17. What is the sum of $48,444 + 57,555 + 66,333$.
99,999?

LESSON CXIX.

- . In a school 25 girls learn to write, 20 learn arithmetic, 18 learn grammar, 15 learn geography, and 12 learn history ; what number of girls are there in the school ?
- . There is an orchard in which there are 75 apple-trees, 25 peach-trees, 15 pear-trees, and 12 plum-trees ; what is the whole number of trees in the orchard ?
- . There is a school in which there are 4 classes ; in the first class there are 125 girls, in the second 120, in the third 124, and in the fourth 175. What is the whole number of girls in the school ?
- . A gardener has in his nursery 525 apple-trees, 375 peach-trees, 275 cherry-trees, 250 plum-trees, 175 pear-trees, and 750 other trees of various kinds ; how many trees are there in the nursery ?
- . In a certain farm there are 124 acres under cultivation, 75 acres for mowing, 140 acres of pasture, and 175 acres of wood-land ; what number of acres are there in the farm ?
- . A man purchased a farm for which he paid 5,750 dollars ; he afterwards paid 375 dollars for clearing and fencing, and 325 dollars for barns and sheds. How many dollars did the farm cost him ?
- . A mechanic owns five houses. No. 1 is worth 7,525 dollars ; No. 2, 6,475 dollars ; No. 3, 5,845 dollars ; No. 4, 5,425 dollars ; No. 5, 5,300 dollars. What number of dollars are the five houses worth ?
- . A teacher wished to know how many questions had been performed by the first class in arithmetic during the last 5 weeks ; and on inquiry, he found that the class had performed 75 questions during the first week, 85 during the second week, 95 during the third, 105 during the fourth, and 125 during the fifth week. How many questions had they performed during the last five weeks ?
- . Three trains of cars started from Boston on the same day ; the first train carried 525 passengers, the second 675, and the third 750. How many passengers were there in the three trains ?

LESSON CXX.

SUBTRACTION.

SUBTRACTION is the method of taking a *less* number from a *greater*, to find the *remainder*, or *difference*.

The *less* number is called the *subtrahend*, and the *greater*, the *minuend*.

The number found by taking a *less* number from a *greater* is called the *remainder*, or *difference*, and it shows how many the *greater* number exceeds the *less*.

Subtraction is performed, when each figure of the less number is smaller than the corresponding figure of the greater, by taking each figure of the less number from the corresponding figure of the greater, and writing the remainder underneath; the several remainders will express the whole difference.

Illustration. — A merchant purchased 765 yards of cloth, and has since sold 523 yards of it; what number of yards has he remaining unsold?

765	No. of yards purchased.	We first write down the
523	No. of yards sold.	greater number; then we
242	No. of yards unsold.	write the less number under
		the greater, placing units
		under units, tens under
		tens, and hundreds under
		hundreds. We then take 3
		units from 5 units, and 2
		units remain, which we write
		directly under the units. Then
		2 tens from 6 tens, and
		4 tens remain, which we write
		under the tens. Lastly,
		5 hundred from 7 hundred, and
		2 hundred remain, which we
		write under the hundreds. The
		whole remainder or difference is
		242.

When any figure of the less number is larger than the corresponding figure of the greater number, the following question and its illustration will show the method of performing the operation: —

A man borrowed 94 dollars, and has paid 46 dollars; how many dollars remain unpaid?

Borrowed	94	dollars.	We cannot take 6 units from
Paid	46	dollars.	4 units; and as 10 units of any
Unpaid	48	dollars.	lower order are equal to 1 unit
			of the next higher order, we

add 10 units to 4 units, and the sum is 14 units; and 6 units from 14 units leave 8 units. We now add 1 (*ten*) to the 4 tens, and the sum is 5 tens, and 5 tens from 9 tens leave 4 tens; therefore 48 dollars remain unpaid. The reason of this method of performing subtraction depends upon a self-evident truth, viz., *that if two unequal numbers be equally increased, their difference remains the same.*

From the above examples and illustrations, we derive the following

RULE. — *Write down the greater number; then write the less number under it, placing units under units, tens under tens, hundreds under hundreds, and draw a line underneath.*

Begin with the units, and subtract each figure of the less number in succession from the figure over it, and write the remainder underneath.

Whenever a figure of the less number is greater than the figure over it, add ten to the upper figure, subtract the lower figure from the amount, then add one to the next lower figure before it is subtracted.

Subtraction is indicated by a short horizontal line, thus, $12 - 8 = 4$; which is read, 12 minus 8 equals 4, or 12 less 8 equals 4.

LESSON CXXI.

EXERCISES TO BE PERFORMED ON THE SLATE.

(1.) 345 <u>123</u>	(2.) 678 <u>456</u>	(3.) 954 <u>463</u>	(4.) 560 <u>844</u>
(5.) 9,876 <u>1,234</u>	(6.) 4,325 <u>1,416</u>	(7.) 5,015 <u>4,144</u>	(8.) 6,305 <u>4,117</u>
(9.) 54,321 <u>12,345</u>	(10.) 98,765 <u>40,876</u>	(11.) 50,000 <u>43,221</u>	(12.) 75,015 <u>46,348</u>

LESSON CXXII.

1. A merchant borrowed 1,275 dollars, and has paid 750 dollars; how many dollars remain unpaid?
2. A trader purchased 2,500 yards of cloth, and has sold 1,745 yards of it; how many yards has he remaining unsold?
3. If a farm and the buildings on it be valued at 12,000 dollars, and the buildings be valued at 4,575 dollars, what is the value of the land?
4. A man purchased an estate, for which he paid 13,750 dollars, and has sold it for 15,225 dollars; what number of dollars did he gain by trading?
5. The Rocky Mountains are 12,500 feet above the level of the ocean, and the Andes are 21,440 feet; how many feet higher are the Andes than the Rocky Mountains?
6. A merchant purchased a quantity of goods for which he paid 2,750 dollars; the goods being damaged, he sold them for 395 dollars less than cost. What did he get for the goods?
7. A farmer raised 1,275 bushels of wheat, and has sold 786 bushels of it; what number of bushels has he remaining unsold?
8. A farmer sold a load of cheese for 195 dollars, and took goods in payment to the amount of 49 dollars, and the balance in money; how much money did he receive?
9. A man paid 125 dollars for a horse, and 75 dollars for a wagon; how much did the cost of the horse exceed the cost of the wagon?
10. A tree 95 feet in height was broken off by the wind; the top part which fell was 39 feet in length. How high was the part which was left?
11. A merchant purchased a piece of broadcloth, for which he paid 240 dollars; but being damaged, he sold it for 185 dollars. How many dollars did he lose?
12. A cargo of fruit cost 1,075 dollars, but it was so much damaged by a storm that the owner sold it for 890 dollars; what number of dollars did he lose?

LESSON CXXIII.

1. A gentleman purchased a gold watch for 65 dollars, a chain for 12 dollars, and a key for 5 dollars; he afterwards sold the whole for 100 dollars. Did he gain or lose, and how much?
2. Charles had 175 marbles; how many had he left after giving 25 to William, 19 to George, 38 to Samuel, 49 to Edward, 41 to John, and losing 2?
3. Purchased a farm for 2,125 dollars, paid for buildings and stock 1,250 dollars; for how much must I sell the whole to gain 500 dollars?
4. A trader sold from a piece of silk containing 45 yards, at one time 15 yards, at another time 10 yards, and at another time 12 yards; how many yards were left in the piece?
5. "A boy bought a sled for 28 cents, and gave 14 cents to have it repaired; he sold it for 40 cents. Did he gain or lose by the bargain, and how much?"
6. A man owing 350 dollars, paid at one time 47 dollars, at another time 84 dollars, at another time 35 dollars, and at another time 120 dollars; how much did he then owe?
7. A lady gave 6,000 dollars to humane institutions; viz., 1,500 dollars to the Orphan Asylum, 2,500 dollars to the Institution for the Blind, and the remainder for the education of the Deaf and Dumb. What was the sum given to the last-named institution?
8. A market-man having 575 pounds of butter, sold 125 pounds to one man, 95 pounds to another, and 45 pounds to another; how many pounds had he remaining unsold?
9. $915 + 624 + 450 + 375 - 1,125 =$ how many?
10. $15,475 + 25,750 + 145,725 - 85,000 =$ how many?
11. $75,425 + 84,676 + 95,500 - 150,000 =$ how many?
12. $94,645 + 15,106 + 44,350 - 105,666 =$ what number?

LESSON CXXIV.

MULTIPLICATION.

MULTIPLICATION is the method of taking or repeating one of two given numbers as many times as there are units in the other. *Multiplication* is also a short method of performing addition, when all the numbers to be added are alike.

One of the two given numbers is called the *multiplicand*, and is the number to be multiplied.

The other is called the *multiplier*, and it is the number to multiply by, and shows the number of times the multiplicand is to be taken or repeated.

The number produced by multiplying one of the two given numbers by the other is called the *product*, and it contains either of the two given numbers as many times as there are units in the other.

The multiplicand and multiplier are called *factors* of the product.

The sign of multiplication is an inclined cross; thus, $8 \times 5 = 40$, which is read, 8 multiplied by 5 is equal to 40.

Illustration First. — Suppose we wish to find the cost of 3 yards of cloth, at 12 cents a yard. It is plain that 3 yards will cost three times as many cents as one yard.

	<i>First Method.</i>	<i>Second Method.</i>
Multiplicand,	12 cents, the price of 1 yd.	12 cents.
Multiplier,	3, the number of yards.	12 cents.
Product,	36 cents, the cost of 3 yds.	12 cents.
	The cost of 3 yards, 36 cents.	

We may write down 12 cents, the price of one yard, and multiply them by 3, the number of yards, as is done in the first method; or, we may write down 12 cents, the price of one yard, 3 times, and add them, as is done in the second method: the result is the same in each of the methods.

Illustration Second. — If an acre of land is worth 125 dollars, how many dollars are 9 acres worth?

If one acre is worth 125 dollars, 9 acres are worth 9

as 125 dollars; and nine times 125 dollars can be had by multiplying 125 by 9, in the following manner:

	Hunds. Tens. Units.	
Multiplicand,	125	dols.
Multiplier,	9	
<hr/>		
Product,	1125	dols.

We write down the multiplicand, 125; and write the multiplier, 9, under the units of the multiplicand. We then say, 9 times 5 units are 45 units, or 4 tens and 5 units; we write down the 5 units, reserve the 4 tens: then, 9 times 2 tens are 18 tens, and the tens which we reserved are 22 tens, or 2 hundred, and tens; we write down the 2 tens, and reserve the 2 hundred: then, 9 times 1 hundred are 9 hundred, and 2 hundred which we reserved are 11 hundred, or 1 thousand, 1 hundred; both of which we write down, and the whole product is 1,125, the number of dollars that 9 acres worth.

From the preceding questions and illustrations, we derive the following rule for multiplication, when the multiplier does not exceed 12.

RULE. — *Write down the multiplicand; then write the multiplier under the multiplicand, placing units under units, tens under tens, and draw a line underneath.*

Multiply each figure of the multiplicand, beginning with units, by the multiplier: when the product of any figure does not exceed nine, write it under the figure multiplied; when the product exceeds nine, write down the right-hand figure of it, and add the left-hand figure, or figures, to the product of the next figure, and write down the whole product of the last figure.

LESSON CXXV.

	(1.)	(2.)	(3.)	(4.)
Multiply	432	543	654	765
by	5	6	7	8
	<hr/>	<hr/>	<hr/>	<hr/>
	(5.)	(6.)	(7.)	(8.)
Multiply	20,406	46,075	56,708	76,543
by	9	10	11	12
	<hr/>	<hr/>	<hr/>	<hr/>

9. What is the value of 9 acres of land, at 125 dollars an acre?
10. There are 1,760 yards in one mile; how many yards are there in 10 miles?
11. In one year there are 365 days; how many days are there in 11 years?
12. There are 2,240 pounds in one ton; how many pounds are there in 12 tons?

LESSON CXXVI.

What will be the product of 7,654 multiplied by 543?

<i>Illustration of</i>	7,654 multiplicand.
<i>the process.</i>	543 multiplier.
	$\begin{array}{r} 22962 = 3 \text{ times the multiplicand.} \\ 30616 = 40 \text{ times the multiplicand.} \\ 38270 = 500 \text{ times the multiplicand.} \\ \hline \end{array}$
	<p>Product, 4,156,122 = 543 times the multiplicand.</p>

When the multiplier consists of several figures, we first multiply the multiplicand by the units of the multiplier, as directed in the preceding rule. We next multiply the multiplicand by the tens of the multiplier, and write the first figure of the product in the place of tens, because units multiplied by tens produce tens. Then we multiply the multiplicand by the hundreds of the multiplier, and write the first figure of the product in the place of hundreds, because units multiplied by hundreds produce hundreds. Finally, we add the several products, and the total product thus obtained is 4,156,122.

From the preceding illustration we deduce the following rule for multiplication, when the multiplier consists of several figures: —

RULE. — *Write down the multiplicand; then write the multiplier under the multiplicand, placing units under units, tens under tens, and hundreds under hundreds. Multiply the multiplicand by each significant figure*

of the multiplier, in succession, beginning with units, and write the first figure of each product directly under the figure by which you are multiplying.

Find the sum of the several products; their sum will be the total product required.

LESSON CXXVII.

1. What will be the product of 325 multiplied by 23?
2. What will be the product of 436 multiplied by 45?
3. What will be the product of 578 multiplied by 67?
4. What will be the product of 908 multiplied by 98?
5. What will be the product of 315 multiplied by 234?
6. What will be the product of 435 multiplied by 506?
7. What will be the product of 508 multiplied by 805?
8. What will be the product of 645 multiplied by 744?
9. What will be the product of 719 multiplied by 912?
10. What will be the product of 915 multiplied by 814?
11. If a ship sail uniformly 175 miles each day, what number of miles will she sail in 25 days?
12. A man purchased a wood-lot, containing 45 acres, at 35 dollars an acre; what did it cost him?
13. If an acre of land produce 32 bushels of wheat, how many bushels will 64 acres produce?
14. If a bale of sheeting contain 36 pieces, and each piece measures 32 yards, what number of yards does the bale contain?
15. If an acre of land produce 225 bushels of potatoes, what number of bushels will 25 acres produce?
16. If an acre of land is worth 225 dollars, what is the value of a farm containing 175 acres?
17. A merchant imported 350 boxes of oranges. What number of oranges did he import, supposing each box to contain 180 oranges?
18. In an orchard there are 120 apple-trees. Supposing each tree to bear 10 bushels of apples, and each bushel to contain 240 apples, and each apple to contain 12 seeds, what number of seeds are there in the whole number of apples?

LESSON CXXVIII.

DIVISION.

DIVISION is the method of finding how many times, or what part of a time, *one* of two given numbers is contained in the *other*; or, it is the process of finding any required part of any given number. Division is also a short method of performing several subtractions of the same number.

One of the two given numbers is called the *dividend*, and is the number to be divided.

The *other* is called the *divisor*, and is the number to divide by, and indicates what part of the dividend is required.

The number found by the operation is called the *quotient*, and it shows the number of times, or part of a time, that the divisor is contained in the dividend. It expresses also the number of units, or part of a unit, in the required part of the dividend.

The *sign* of division is a short line between two points, thus, \div , and is read, *divided by*. When placed between two numbers, it shows that the number before it is to be divided by the number after it; thus, $20 \div 5 = 4$, which is read, 20 divided by 5 equals 4.

Division is also denoted by writing the divisor under the dividend, with a short line between them; thus, $\frac{12}{6}$, $\frac{3}{4}$, which may be read, 12 divided by 6, 3 divided by 4.

Illustration First. — Suppose we wish to find how many yards of cloth can be purchased with 36 cents, at 12 cents a yard. It is plain that as many times as 12 cents are contained in 36 cents, so many yards can be purchased.

In the first method,

$$\begin{array}{r} \text{1st method.} \\ \text{The divisor } 12 \overline{) 36} \text{ the dividend.} \\ \underline{3} \text{ the quotient.} \end{array}$$
 we write 36, the number of cents, for the dividend, and then write 12, the number of cents in the price of a yard, at the left of the dividend, for the divisor; we find that 12 is contained in 36, 3 times; hence 3 is the number of yards that can be purchased with 36 cents, at 12 cents a yard.

2d method. In the second method, we write down 36 cents, and subtract 12 cents from 36 cents, and 24 cents remain; we next subtract 12 cents from 24 cents, and 12 cents remain; finally, we subtract 12 cents from 12 cents, and nothing remains. We here see that 12 cents has been subtracted from 36 cents 3 times; hence 3 is the number of yards that can be purchased with 36 cents, at 12 cents a yard. We have thus found that the same number of yards can be purchased with 36 cents, by each of the methods.

Illustration Second. — How many times is 9 contained in 675? We write down the dividend and draw a curve line on each side of it, and then write the divisor at the left of the dividend.

	Hunds.	Tens.	Units.	
9)	6	7	5	(75)
	6	3		
	—			
		4	5	
		—		
			4	5
			—	

We next find the number of times that the divisor, 9, is contained in 67 tens, which is 7 (tens) times; we write the 7 (tens) at the right of the dividend for the first figure in the quotient, and multiply the divisor by the 7 (tens); the product is 63 tens, which we write under the 67 tens: we then subtract 63 tens from 67 tens; the remainder is 4 tens.

We then place the 5 units of the dividend at the right of the remainder, and we have the number 45. The divisor, 9, is contained 5 times in 45; we write the 5 units at the right of the 7 tens in the quotient, and multiply the divisor by the 5 units; the product is 45, which we write under the 45. There being no remainder, the operation is completed, and we have found that 9 is contained 75 times in 675.

Illust. 3d. — If 10,624 dollars be equally divided among 15 men, what number of dollars will each man receive? We first write down the dividend, and then write the divisor at its left, as before. We perceive

Divisor.	Dividend.	Quotient.	
15)	10624	708 $\frac{4}{5}$	Ans.
	105		
	—		
	124		
	120		
	—		
	4	remainder.	

that the divisor, 15, is contained in 106 (hundred) 7 (hun-

dred) times ; we write 7 (hundred) in the quotient, and multiply the divisor by it ; the product is 105 hundred, which we write under 106 hundred ; we then subtract, and the remainder is 1 hundred : we then place the 2 (tens) of the dividend at the right of the remainder, and the number is 12 tens, which being less than the divisor, we write a cipher in the place of tens in the quotient, and then place the 4 units of the dividend at the right of the 12 tens, and the number is 124 : we find that 15 is contained in 124, 8 times ; we write 8 in the quotient, and multiply the divisor by it ; the product is 120, which we subtract from 124, and the remainder is 4. This remainder, 4, will contain 15 $\frac{4}{15}$ fifteenths of one time, which we write in a fractional form at the right of the quotient figures before found, and we have the complete quotient, $708\frac{4}{15}$, which is the number of dollars that each man will receive.

From the preceding questions and illustrations we derive the following *general rule* for division : —

RULE. — *Write down the dividend ; draw a curve line on each side of it, and write the divisor at its left.*

Take so many of the highest orders of figures of the dividend as will contain the divisor ; find the number of times the divisor is contained in them ; write a figure expressing the number at the right of the dividend, for the first figure of the quotient ; then multiply the divisor by this quotient figure, and write the product under those figures of the dividend taken.

Subtract this product from those figures, and place the next undivided figure of the dividend at the right of the remainder ; then divide these orders of figures as before, and thus proceed until all the figures of the dividend are divided.

If there be a final remainder, write it over a short line at the right of the quotient figures already found, and place the divisor under it, which will express what part of a time the remainder contains the divisor, and completes the quotient.

Whenever a figure of the dividend has been annexed to the remainder, if this partial dividend is less than the

divisor, write a cipher in the quotient, and annex another figure.

LESSON CXXIX.

1. How many times is 13 contained in 4,056?
 2. How many times is 15 contained in 5,475?
 3. How many times is 16 contained in 6,804?
 4. How many times is 18 contained in 9,221?
 5. How many times is 21 contained in 8,757?
 6. What is 1 thirty-fifth of 75,445? Of 150,890?
 7. What number of times is 125 contained in 46,875?
 8. What number of times is 276 contained in 89,700?
 9. What number of times is 365 contained in 147,825?
 10. If a man's income be 5,110 dollars a year, what is that a day, allowing the year to contain 365 days?
 1. There are 144 square inches in 1 square foot; how many square feet are there in 10,800 square inches?
 2. In one acre there are 160 square rods; how many acres are there in 28,000 square rods?
 3. A man purchased a farm containing 275 acres for 6,875 dollars; how many dollars did he pay for each acre?
 4. The circumference of the earth is about 25,000 miles; if a railroad car travel at the rate of 480 miles a day, in how many days would it travel round the earth?
-

LESSON CXXX.

When the divisor does not exceed 12, the operation may be shortened by performing the operation mentally, and writing only the quotient.

Illustration. — If 109,025 acres of land be equally divided among 12 men, what number of acres will each man have?

$$12 \overline{) 109,025}$$

Ans. 9,085 $\frac{5}{12}$ acres.

The two highest orders of figures being less than the divisor,

we take the three highest, 109 (thousand), and find that 12 is contained in 109 (thousand) 9 (thousand) times; we write the 9 under the order of thousands in the dividend, and, *mentally*, multiply the divisor by it; the product is 108 (thousand), which we subtract from 109 (thousand); the remainder is 1 (thousand); this remainder and next figure of the dividend, 10 (hundred), being less than the divisor, we write a cipher in the place of hundreds in the quotient: we then find that the divisor is contained in the remainder and two next figures of the dividend, 102 (tens), 8 times; we write 8 in the quotient, in the place of tens, and multiply the divisor by it; the product is 96 (tens), which we subtract from 102 (tens); the remainder is 6 (tens): we then find that the divisor is contained in this remainder and last figure of the dividend, 65, 5 times; we write 5 in the quotient, in the place of units; we then multiply the divisor by it, and the product is 60, which we subtract from 65; the remainder is 5: this remainder will contain the divisor 5 twelfths of 1 time, which we place at the right of the quotient figures before found, and the complete quotient is $9,085\frac{1}{2}$, the number of acres which each man will have.

1. Divide each of the following numbers by 2 and 4.
446; 682; 566; 874; 916; 1,276; 2,548.
2. Divide each of the following numbers by 4 and 6.
448; 816; 564; 728; 824; 936; 1,272.
3. Divide each of the following numbers by 6 and 8.
324; 648; 786; 672; 846; 936; 1,236.
4. Divide each of the following numbers by 8 and 9.
848; 728; 928; 1,688; 1,806; 1,248; 1,848.
5. Divide each of the following numbers by 9 and 10.
819; 729; 1,242; 1,539; 1,863; 2,745.
6. Divide each of the following numbers by 10 and 11.
540; 624; 850; 1,260; 1,580; 2,460.
7. Divide each of the following numbers by 11 and 12.
372; 612; 720; 840; 1,800; 1,728.
8. If 1,296 dollars be equally divided among 9 men, what number of dollars will each man receive?
9. If 12 bales of cotton, each of the same size, weigh 6,912 pounds, what is the weight of each bale?

FRACTIONS.

INTRODUCTORY LESSON.

Definitions and Illustrations.

WHEN any *whole thing* or *number* is divided into any number of *equal parts*, the parts are called *fractions* of the thing or number.

If an orange be divided into *two* equal parts, the parts are called *halves*. If it be divided into *three* equal parts, the parts are called *thirds*. If it be divided into *four* equal parts, the parts are called *fourths*. If it be divided into *five* equal parts, the parts are called *fifths*. If it be divided into *six* equal parts, the parts are called *sixths*. If it be divided into *seven* equal parts, the parts are called *sevenths*. If it be divided into *eight* equal parts, the parts are called *eighths*. If it be divided into *nine* equal parts, the parts are called *ninths*. If it be divided into *ten* equal parts, the parts are called *tenths*. If it be divided into *eleven* equal parts, the parts are called *elevenths*. If it be divided into *twelve* equal parts, the parts are called *twelfths*. The number of equal parts into which any whole thing or number is divided always indicates the *name* of the parts.

Fractions are usually expressed by two numbers written one above the other, with a short line between them; thus: $\frac{1}{2}$ one half, $\frac{2}{3}$ two thirds, $\frac{3}{4}$ three fourths, $\frac{4}{5}$ four fifths, $\frac{5}{6}$ five sixths, $\frac{6}{7}$ six sevenths, $\frac{7}{8}$ seven eighths, $\frac{8}{9}$ eight ninths, $\frac{9}{10}$ nine tenths, $\frac{10}{11}$ ten elevenths, $\frac{11}{12}$ eleven twelfths.

The number *below* the line expresses the number of equal parts into which the whole thing or number is supposed to be divided; and it is called the *denominator*, because it indicates the *name* of the parts, as *thirds*, *fourths*, *fifths*, &c.

The number *above* the line is called the *numerator*, because it shows the number of equal parts expressed by the fraction.

LESSON I.

1. In a unit, or 1, there are 2 *halves*. How many halves are there in 2? In $2\frac{1}{2}$? In 4? In $4\frac{1}{2}$? In 6? In $6\frac{1}{2}$? In 8? In $8\frac{1}{2}$? In 10? In $10\frac{1}{2}$?

The 2 halves of any whole thing or unit are equal to the whole thing or unit; hence, in any number of halves, there must be 1 half as many whole ones or units as there are halves.

2. How many whole ones are there in 4 halves? In 5 halves? In 8 halves? In 9 halves? In 12 halves? In 13 halves? In 16 halves? In 17 halves? In 20 halves? In 21 halves? In 24 halves?

3. In a unit, or 1, there are 3 *thirds*. How many thirds are there in 2? In $2\frac{1}{3}$? In 4? In $4\frac{2}{3}$? In 6?

Since the 3 thirds of any whole thing or unit are equal to the whole thing or unit, there must be 1 third as many whole ones or units as there are thirds.

4. How many whole ones are there in 6 thirds? In 7 thirds? In 12 thirds? In 14 thirds? In 18 thirds? In 19 thirds? In 24 thirds?

5. In a unit, or 1, there are 4 *fourths*. How many fourths are there in 3? In $5\frac{1}{4}$? In 7? In $9\frac{3}{4}$?

Since 4 fourths are equal to a whole one, there must be 1 fourth as many whole ones as there are fourths.

6. How many whole ones in 12 fourths? In 21 fourths? In 28 fourths? In 38 fourths?

7. In a unit, or 1, there are 5 *fifths*. How many fifths are there in 2? In $3\frac{1}{5}$? In 4? In $5\frac{2}{5}$? In 6?

Since 5 fifths are equal to a whole one, there must be 1 fifth as many whole ones as there are fifths.

8. How many whole ones are there in 10 fifths? In 16 fifths? In 20 fifths? In 27 fifths? In 30 fifths?

9. In a unit, or 1, there are 6 *sixths*. How many sixths are there in 3? In $4\frac{1}{6}$? In 5? In $6\frac{2}{6}$? In 7?

Since 6 sixths are equal to a whole one, there must be 1 sixth as many whole ones as there are sixths.

10. How many whole ones are there in 18 sixths? In 25 sixths? In 30 sixths? In 38 sixths? In 42 sixths?

LESSON II.

1. In a unit, or 1, there are 7 *sevenths*. How many sevenths are there in 4? In $5\frac{1}{7}$? In 6? In $7\frac{2}{7}$? In 8? In $9\frac{3}{7}$? In 10? In 12?

Since 7 sevenths are equal to a whole one, there must be 1 seventh as many whole ones as there are sevenths.

2. How many whole ones are there in 28 sevenths? In 36 sevenths? In 42 sevenths? In 51 sevenths? In 56 sevenths? In 66 sevenths? In 84 sevenths?
3. In a unit, or 1, there are 8 *eighths*. How many eighths are there in 5? In $6\frac{3}{8}$? In 7? In $8\frac{5}{8}$? In 9? In $10\frac{7}{8}$? In 11? In 12?

Since 8 eighths are equal to a whole one, there must be 1 eighth as many whole ones as there are eighths.

4. How many whole ones are there in 40 eighths? In 51 eighths? In 56 eighths? In 69 eighths? In 72 eighths? In 86 eighths? In 88 eighths? In 96 eighths?
5. In a unit, or 1, there are 9 *ninths*. How many ninths are there in 6? In $7\frac{1}{9}$? In 8? In $9\frac{2}{9}$? In 10? In $10\frac{4}{9}$? In 11? In 12?

Since 9 ninths are equal to a whole one, there must be 1 ninth as many whole ones as there are ninths.

6. How many whole ones are there in 54 ninths? In 64 ninths? In 72 ninths? In 84 ninths? In 90 ninths? In 95 ninths? In 99 ninths? In 108 ninths?
7. In a unit, or 1, there are 10 *tenths*. How many tenths are there in 5? In $6\frac{3}{10}$? In 8? In $9\frac{6}{10}$? In 10? In $11\frac{9}{10}$? In 12?

Since 10 tenths are equal to a whole one, there must be 1 tenth as many whole ones as there are tenths.

8. How many whole ones are there in 50 tenths? In 63 tenths? In 80 tenths? In 96 tenths? In 100 tenths? In 119 tenths? In 120 tenths?

LESSON III.

1. If 1 *half* of a yard of cloth cost 5 cents, what will 2 halves, or a whole yard, cost?
2. If 1 *third* of a yard of cloth cost 4 cents, what will 2 thirds of a yard cost? What will 3 thirds, or a whole yard, cost?
3. If 1 *fourth* of a gallon of milk is worth 5 cents, what are 2 fourths of a gallon worth? 3 fourths? What is a gallon worth?
4. If 1 *fifth* of a bushel of apples is worth 10 cents, what are 2 fifths of a bushel worth? 3 fifths? 4 fifths? What is a bushel worth?
5. If 1 *sixth* of a bushel of wheat is worth 12 cents, what are 2 sixths of a bushel worth? 3 sixths? 4 sixths? 5 sixths? What is a bushel worth?
6. If 1 *seventh* of a yard of silk cost 10 cents, what will 2 sevenths of a yard cost? 3 sevenths? 4 sevenths? 5 sevenths? 6 sevenths? What will a yard cost?
7. If 1 *eighth* of a pound of tea cost 7 cents, what will 2 eighths of a pound cost? 3 eighths? 4 eighths? 5 eighths? 6 eighths? 7 eighths? What will a pound cost?
8. If 1 *ninth* of an acre of land is worth 12 dollars, what are 2 ninths of an acre worth? 3 ninths? 4 ninths? 5 ninths? 6 ninths? 7 ninths? 8 ninths? What is an acre worth?
9. If 1 *tenth* of a bushel of apples cost 10 cents, what will 2 tenths of a bushel cost? 3 tenths? 4 tenths? 5 tenths? 6 tenths? 7 tenths? 8 tenths? 9 tenths? What will a bushel cost?
10. If 1 *twelfth* of a pound of gold dust is worth 16 dollars, what are 2 twelfths of a pound worth? 3 twelfths? 4 twelfths? 5 twelfths? 6 twelfths? 7 twelfths? 8 twelfths? 9 twelfths? 10 twelfths? 11 twelfths? What is a pound worth?
11. If a yard of silk is worth 80 cents, what are $10\frac{1}{2}$ yards worth? What are $12\frac{3}{4}$ yards worth?

LESSON IV.

1. When corn is worth $\frac{3}{4}$ of a dollar a bushel, how many dollars will 8 bushels cost? How many dollars will 12 bushels cost?
2. If a boy can earn $\frac{3}{5}$ of a dollar in a day, how many dollars can he earn in 5 days? How many dollars can he earn in 10 days?
3. A man worked 10 days for $\frac{6}{5}$ of a dollar a day; how many dollars did he earn in the 10 days?
4. William paid $\frac{3}{8}$ of a dollar for a pair of gloves, and 8 times as much for a hat; how many dollars did he pay for his hat?
5. A lady paid $\frac{7}{8}$ of a dollar for a pair of shoes, and 8 times as much for a bonnet; how many dollars did she pay for her bonnet?
6. A man paid $\frac{5}{8}$ of a dollar for a bushel of corn; how many dollars must he pay for 8 bushels?
7. Mary is 10 years old, and her age is just $\frac{2}{3}$ the age of Susan; how old is Susan?
8. A boy paid 10 cents for $\frac{5}{6}$ of a pound of raisins; what would a pound cost, at the same rate?
9. A trader purchased a quantity of oats and corn; he paid 35 cents per bushel for the oats, which was $\frac{7}{10}$ as much as he paid per bushel for the corn. What was the price of the corn per bushel?
10. A farmer paid 27 dollars for a cow, which was $\frac{3}{8}$ eighths of what he paid for a horse; how many dollars did he pay for his horse?
11. A trader sold a gold watch for 96 dollars, which was $\frac{8}{7}$ sevenths of what the watch cost him; what was the cost of the watch?
12. Mary is 12 years old, and $\frac{5}{6}$ of Mary's age is $\frac{2}{3}$ thirds of Caroline's age; how old is Caroline?
13. A piece of cloth containing 12 yards was sold for 60 dollars, which was $\frac{5}{4}$ fourths of what it cost; what did it cost? What was the gain on each yard?
14. A man sold a horse for 63 dollars, which was $\frac{7}{8}$ eighths of what the horse cost him; what was the cost of the horse? How much did he lose?

LESSON V.

Fractions (or fractional parts of the same thing or number) having the same name or denominator are added and subtracted in the same manner as whole numbers are added and subtracted.

1. 1 half and 2 halves and 3 halves and 4 halves, less 6 halves, are how many halves? How many whole ones?
2. 2 thirds and 4 thirds and 5 thirds and 7 thirds, less 6 thirds, are how many thirds? How many whole ones?
3. 3 fourths and 5 fourths and 6 fourths and 10 fourths, less 8 fourths, are how many fourths? How many whole ones?
4. 2 fifths and 3 fifths and 4 fifths and 6 fifths, less 10 fifths, are how many fifths? How many whole ones?
5. 8 sixths and 7 sixths and 5 sixths and 4 sixths, less 12 sixths, are how many sixths? How many whole ones?
6. 3 sevenths and 4 sevenths and 5 sevenths and 9 sevenths, less 7 sevenths, are how many sevenths? How many whole ones?
7. 10 eighths and 9 eighths and 7 eighths and 4 eighths, less 6 eighths, are how many eighths? How many whole ones?
8. 4 ninths and 5 ninths and 6 ninths and 7 ninths and 8 ninths, less 3 ninths, are how many ninths? How many whole ones?
9. 9 tenths and 8 tenths and 7 tenths and 6 tenths and 5 tenths and 3 tenths, less 8 tenths, are how many tenths? How many whole ones?
10. 4 elevenths and 5 elevenths and 6 elevenths and 10 elevenths, less 3 elevenths, are how many elevenths? How many whole ones?
11. 10 twelfths and 9 twelfths and 8 twelfths and 7 twelfths and 6 twelfths, less 4 twelfths, are how many twelfths? How many whole ones?

LESSON VI.

When fractions having different names or denominators are to be added or subtracted, they must first be changed to fractions having the same name or denominator. This may be done by multiplying the numerator and denominator of one or both of the given fractions by such number as will produce the same number for a denominator of each fraction.

1. What is the sum of $\frac{1}{2}$ and $\frac{1}{4}$? What the difference?
 $\frac{1}{2} = \frac{2}{4}$, and $\frac{2}{4}$ and $\frac{1}{4} = \frac{3}{4}$, their sum. $\frac{2}{4}$ less $\frac{1}{4} = \frac{1}{4}$, their difference.
2. What is the sum of $\frac{3}{4}$ and $\frac{3}{4}$? What the difference?
 $\frac{3}{4} = \frac{6}{8}$, and $\frac{3}{4} = \frac{6}{8}$. $\frac{6}{8} + \frac{6}{8} = \frac{12}{8} = 1\frac{4}{8}$, their sum. $\frac{6}{8} - \frac{6}{8} = \frac{0}{8}$, their difference.
3. What is the sum of $\frac{1}{2}$ and $\frac{2}{4}$? What the difference?
4. What is the sum of $\frac{1}{2}$ and $\frac{1}{4}$? What the difference?
5. What is the sum of $\frac{1}{4}$ and $\frac{3}{8}$? What the difference?
6. What is the sum of $\frac{2}{3}$ and $\frac{1}{6}$? What the difference?
7. What is the sum of $\frac{3}{4}$ and $\frac{1}{8}$? What the difference?
8. What is the sum of $\frac{5}{6}$ and $\frac{1}{12}$? What the difference?
9. What is the sum of $\frac{3}{5}$ and $\frac{2}{10}$? What the difference?
10. What is the sum of $\frac{2}{3}$ and $\frac{1}{6}$? What the difference?
11. Harriet purchased $\frac{3}{4}$ of a yard of cloth at one store, and $\frac{1}{2}$ of a yard at another. How many fourths of a yard did she purchase? how many yards?
12. Augusta paid $\frac{1}{2}$ of all her money for a shawl, and $\frac{1}{3}$ of it for a bonnet; what part of her money had she remaining?
13. Henry purchased a pine-apple, and gave $\frac{1}{3}$ of it to his sister, and $\frac{1}{4}$ of it to his brother; what part of it had he left?
14. A man having undertaken to perform a job of work, did $\frac{1}{2}$ of it the first day, $\frac{1}{3}$ of it the second day, and the remainder of it the third day; what part of it did he do the third day?
15. A market-woman sold $\frac{2}{3}$ of all her apples to one man, and $\frac{1}{3}$ of them to another; what part of them had she remaining unsold?

FEDERAL MONEY.

Federal money is the national currency of the United States. The denominations of Federal money are, the eagle, E.; the dollar, \$; the dime, d.; the cent, c.; and the mill, m.

The gold coins are, the eagle, the double-eagle, the half-eagle, the quarter-eagle, and the dollar. The silver coins are, the dollar, the half-dollar, the quarter-dollar, the dime, the half-dime, and the three-cent piece. The copper coins are, the cent and the half-cent.

1 eagle = 10 dollars. \$.	1 dollar = $\frac{1}{10}$ of 1 eagle.
1 dollar = 10 dimes. d.	1 dime = $\frac{1}{10}$ of 1 dollar.
1 dime = 10 cents. c.	1 cent = $\frac{1}{10}$ of 1 dime.
1 cent = 10 mills. m.	1 mill = $\frac{1}{10}$ of 1 cent.

The following table exhibits the value of the fractional parts of one dollar, expressed in cents, which are in common use.

$\frac{2}{10}$ of a dollar = 5 cts.	$\frac{1}{4}$ of a dollar = 25 cts.
$\frac{1}{5}$ of a dollar = $6\frac{1}{2}$ cts.	$\frac{1}{3}$ of a dollar = $33\frac{1}{3}$ cts.
$\frac{1}{4}$ of a dollar = $8\frac{1}{2}$ cts.	$\frac{2}{5}$ of a dollar = $37\frac{1}{2}$ cts.
$\frac{1}{3}$ of a dollar = 10 cts.	$\frac{3}{4}$ of a dollar = 50 cts.
$\frac{1}{2}$ of a dollar = $12\frac{1}{2}$ cts.	$\frac{4}{5}$ of a dollar = $62\frac{1}{2}$ cts.
$\frac{3}{4}$ of a dollar = $16\frac{3}{4}$ cts.	$\frac{5}{8}$ of a dollar = 75 cts.
$\frac{1}{2}$ of a dollar = 20 cts.	$\frac{7}{8}$ of a dollar = $87\frac{1}{2}$ cts.

In New York, and some other states, the denominations of money in common use are dollars, shillings, and pence; the dollar being equal to 8 shillings or 100 cents, the shilling $12\frac{1}{2}$ cents, and the penny 1 cent.

1 shilling, or $\frac{1}{8}$ of a dollar,	= $12\frac{1}{2}$ cents.
2 shillings, or $\frac{1}{4}$ of a dollar,	= 25 cents.
3 shillings, or $\frac{3}{8}$ of a dollar,	= $37\frac{1}{2}$ cents.
4 shillings, or $\frac{1}{2}$ of a dollar,	= 50 cents.
5 shillings, or $\frac{5}{8}$ of a dollar,	= $62\frac{1}{2}$ cents.
6 shillings, or $\frac{3}{4}$ of a dollar,	= 75 cents.
7 shillings, or $\frac{7}{8}$ of a dollar,	= $87\frac{1}{2}$ cents.
8 shillings, or 1 dollar,	= 100 cents.

ENGLISH MONEY.

The denominations of English money are, the pound, £.; the shilling, s.; the penny, d.; and the farthing, qr.

1 pound = 20 shillings.	1 shilling = $\frac{1}{20}$ of 1 £.
1 shilling = 12 pence.	1 penny = $\frac{1}{12}$ of 1 s.
1 penny = 4 farthings.	1 farthing = $\frac{1}{4}$ of 1 d.

TROY WEIGHT.

Troy weight is used in weighing gold, silver, platina, diamonds, and other precious stones. The denominations of troy weight are, the pound, lb.; the ounce, oz.; the pennyweight, pwt.; and the grain, gr. The standard troy pound of the United States is the weight of 22.794-377 cubic inches of distilled water weighed in air.

1 pound = 12 ounces.	1 ounce = $\frac{1}{12}$ of 1 lb.
1 ounce = 20 pwts.	1 pwt. = $\frac{1}{20}$ of 1 oz.
1 pwt. = 24 grains.	1 grain = $\frac{1}{24}$ of 1 pwt.

AVOIRDUPOIS WEIGHT.

Avoirdupois weight is used in weighing most kinds of merchandise, and all metals except silver and gold. Its denominations are, the ton, t.; the hundred-weight, cwt.; the quarter, qr.; the pound, lb.; the ounce, oz.; and the dram, dr.

1 ton = 20 hund. wt.	1 cwt. = $\frac{1}{20}$ of 1 ton.
1 hund. wt. = 4 quarters.	1 qr. = $\frac{1}{4}$ of 1 cwt.
1 quarter = 28 pounds.	1 lb. = $\frac{1}{28}$ of 1 qr.
1 pound = 16 ounces.	1 oz. = $\frac{1}{16}$ of 1 lb.
1 ounce = 16 drams.	1 dr. = $\frac{1}{16}$ of 1 oz.

APOTHECARIES' WEIGHT.

This weight is used only by apothecaries and physicians in compounding medicines. Its denominations are, the pound, lb.; the ounce, \mathfrak{z} ; the dram, \mathfrak{ss} ; the scruple, \mathfrak{ss} ; and the grain, gr.

1 pound = 12 ounces.	1 ounce = $\frac{1}{12}$ of 1 lb.
1 ounce = 8 drams.	1 dram = $\frac{1}{8}$ of 1 \mathfrak{z} .
1 dram = 3 scruples.	1 scruple = $\frac{1}{3}$ of 1 \mathfrak{ss} .
1 scruple = 20 grains.	1 grain = $\frac{1}{20}$ of 1 \mathfrak{ss} .

LINEAR MEASURE.

This measure is used in measuring distances, lengths, breadths, heights, and depths. Its denominations are, the degree, deg.; the league, lea.; the mile, m.; the furlong, fur.; the rod, rd.; the yard, yd.; the foot, ft.; and the inch, in.

1 degree = 60 G. miles.	1 G. mile = $\frac{1}{60}$ of 1 deg.
1 degree = 69 $\frac{1}{2}$ S. miles.	1 S. mile = $\frac{1}{69\frac{1}{2}}$ of 1 deg.
1 league = 3 miles.	1 mile = $\frac{1}{3}$ of 1 lea.
1 mile = 8 furlongs.	1 furlong = $\frac{1}{8}$ of 1 m.
1 furlong = 40 rods.	1 rod = $\frac{1}{40}$ of 1 fur.
1 rod = 5 $\frac{1}{2}$ yards.	1 yard = $\frac{1}{5\frac{1}{2}}$ of 1 rd.
1 rod = 16 $\frac{1}{2}$ feet.	1 foot = $\frac{1}{16\frac{1}{2}}$ of 1 rd.
1 yard = 3 feet.	1 foot = $\frac{1}{3}$ of 1 yd.
1 foot = 12 inches.	1 inch = $\frac{1}{12}$ of 1 ft.

MISCELLANEOUS MEASURES.

12 single things = 1 dozen.	24 s. of paper = 1 quire.
12 dozen = 1 gross.	20 quires = 1 ream.
12 gross = 1 great gr.	2 reams = 1 bundle.
144 dozen = 1 great gr.	20 single things = 1 score.

SUPERFICIAL OR SQUARE MEASURE.

Superficial or square measure is used in measuring all kinds of surfaces, such as land, paving, flooring, plastering, and everything which has length and breadth. Its denominations are, the mile, m.; the acre, a.; the rood, r.; the rod, rd.; the yard, yd.; the foot, ft.; and the inch, in.

Gunter's chain, used by surveyors in measuring land, also in measuring distances, is 4 rods, or 66 feet, in length, and is composed of 100 links.

1 sq. mile = 640 sq. acres.	1 sq. a. = $\frac{1}{640}$ of 1 sq. m.
1 sq. acre = 4 sq. rods.	1 sq. r. = $\frac{1}{4}$ of 1 sq. a.
1 sq. acre = 160 sq. rods.	1 sq. rd. = $\frac{1}{160}$ of 1 sq. a.
1 sq. rood = 40 sq. rods.	1 sq. rd. = $\frac{1}{40}$ of 1 sq. r.
1 sq. rod = $30\frac{1}{2}$ sq. yards.	1 sq. yd. = $\frac{1}{30\frac{1}{2}}$ of 1 sq. rd.
1 sq. rod = $272\frac{1}{2}$ sq. feet.	1 sq. ft. = $\frac{1}{272\frac{1}{2}}$ of 1 sq. rd.
1 sq. yard = 9 sq. feet.	1 sq. ft. = $\frac{1}{9}$ of 1 sq. yd.
1 sq. foot = 144 sq. inches.	1 sq. in. = $\frac{1}{144}$ of 1 sq. ft.

CUBIC MEASURE.

Cubic measure is used in measuring solids and capacities, or anything that has three dimensions, length, breadth, and thickness. Its denominations are, the cord, c.; the ton, t.; the yard, yd.; the foot, ft.; and the inch, in.

1 cord of wood = 128 c. ft.	1 cubic foot = $\frac{1}{128}$ of 1 c. of wood.
1 foot of wood = 16 c. ft.	1 cubic foot = $\frac{1}{16}$ of 1 ft. of wood.
1 ton of timber = 40 c. ft.	1 cubic foot = $\frac{1}{40}$ of 1 ton of timber.
1 cubic yard = 27 c. ft.	1 cubic foot = $\frac{1}{27}$ of 1 c. yard.
1 cubic foot = 1728 c. in.	1 cubic inch = $\frac{1}{1728}$ of 1 c. foot.

CLOTH MEASURE.

This measure is used for measuring cloth, and other goods which are sold by the yard or ell.

Its denominations are, the English ell, E. ell; the French ell, Fr. ell; the Flemish ell, Fl. ell; the yard, yd.; the quarter, qr.; and the nail, na.

1 English ell	= 5 quarters.	1 qr.	= $\frac{1}{5}$ of 1 E. ell.
1 French ell	= 6 quarters.	1 qr.	= $\frac{1}{6}$ of 1 Fr. ell.
1 Flemish ell	= 3 quarters.	1 qr.	= $\frac{1}{3}$ of 1 Fl. ell.
1 yard	= 4 quarters.	1 qr.	= $\frac{1}{4}$ of 1 yard.
1 quarter	= 4 nails.	1 nail	= $\frac{1}{4}$ of 1 quarter.

DRY MEASURE.

This measure is used in measuring grain, fruit, seeds, roots, salt, sand, oysters, coal, &c. Its denominations are, the chaldron, ch.; the bushel, bu.; the peck, pk.; the quart, qt.; and the pint, pt.

1 chaldron	= 36 bushels.	1 bushel	= $\frac{1}{36}$ of 1 ch.
1 bushel	= 4 pecks.	1 peck	= $\frac{1}{4}$ of 1 bu.
1 peck	= 8 quarts.	1 quart	= $\frac{1}{8}$ of 1 pk.
1 quart	= 2 pints.	1 pint	= $\frac{1}{2}$ of 1 qt.

ALE AND BEER MEASURE.

This measure is used in measuring porter, ale, beer, milk, and water. Its denominations are, the hogshead, hhd.; the barrel, bbl.; the gallon, gal.; the quart, qt.; and the pint, pt.

The beer gallon measures 282 cubic inches.

1 hogshead	= 54 gallons.	1 gallon	= $\frac{1}{54}$ of 1 hhd.
1 barrel	= 36 gallons.	1 gallon	= $\frac{1}{36}$ of 1 bbl.
1 gallon	= 4 quarts.	1 quart	= $\frac{1}{4}$ of 1 gal.
1 quart	= 2 pints.	1 pint	= $\frac{1}{2}$ of 1 qt.

WINE MEASURE.

Wine measure is used in measuring wine, and all spirituous liquors, except porter, ale, and beer. Its denominations are, the tun, t.; the pipe, p.; the hogshead, hhd.; the barrel, bbl.; the gallon, gal.; the quart, qt.; the pint, pt.; and the gill, gl.

The standard gallon of the United States is the wine gallon, which measures 231 cubic inches, and contains 8.3388822 pounds avoirdupois of distilled water.

The British standard imperial gallon measures 277.274 cubic inches, and contains 10 pounds avoirdupois of distilled water.

1 tun	= 2 pipes.	1 pipe	= $\frac{1}{2}$ of 1 tun.
1 pipe	= 2 hogsheads.	1 hhd.	= $\frac{1}{2}$ of 1 pipe.
1 hogshead	= 63 gallons.	1 gallon	= $\frac{1}{63}$ of 1 hhd.
1 barrel	= $31\frac{1}{2}$ gallons.	1 gallon	= $\frac{2}{63}$ of 1 bbl.
1 gallon	= 4 quarts.	1 quart	= $\frac{1}{4}$ of 1 gal.
1 quart	= 2 pints.	1 pint	= $\frac{1}{2}$ of 1 qt.
1 pint	= 4 gills.	1 gill	= $\frac{1}{4}$ of 1 pt.

MEASURE OF TIME.

Time is the measure of duration or existence. Its denominations are, the century, c.; the year, yr.; the month, mo.; the week, wk.; the day, d.; the hour, h.; the minute, m.; and the second, s.

1 century	= 100 years.	1 year	= $\frac{1}{100}$ of 1 c.
1 year	= 12 cal. mo.	1 c. mo.	= $\frac{1}{12}$ of 1 yr.
1 year	= $13\frac{1}{12}$ w. mo.	1 w. mo.	= $\frac{1}{144}$ of 1 yr.
1 year	= $365\frac{1}{4}$ days.	1 day	= $\frac{4}{1461}$ of 1 yr.
1 month	= 4 weeks.	1 week	= $\frac{1}{4}$ of 1 mo.
1 week	= 7 days.	1 day	= $\frac{1}{7}$ of 1 wk.
1 day	= 24 hours.	1 hour	= $\frac{1}{24}$ of 1 d.
1 hour	= 60 minutes.	1 minute	= $\frac{1}{60}$ of 1 h.
1 minute	= 60 seconds.	1 second	= $\frac{1}{60}$ of 1 m.

The year is divided into 12 calendar months, as follows:—

January, 1st mo., has 31 days.	July, 7th mo., has 31 days.
February, 2d " " 28 "	August, 8th " " 31 "
March, 3d " " 31 "	September, 9th " " 30 "
April, 4th " " 30 "	October, 10th " " 31 "
May, 5th " " 31 "	November, 11th " " 30 "
June, 6th " " 30 "	December, 12th " " 31 "

When any year can be divided by 4 without a remainder, it is called leap year, in which February has 29 days.

CIRCULAR MEASURE.

Circular measure is used in measuring circles, latitude and longitude, and in computing the revolution of the earth and other planets round the sun. Its denominations are, the circle, c.; the sign, s.; the degree, °; the minute, ' ; and the second, ''.

1 circle = 12 signs.	1 sign = $\frac{1}{12}$ of 1 c.
1 circle = 360 degrees.	1 degree = $\frac{1}{360}$ of 1 c.
1 sign = 30 degrees.	1 degree = $\frac{1}{30}$ of 1 s.
1 degree = 60 minutes.	1 minute = $\frac{1}{60}$ of 1 deg.
1 minute = 60 seconds.	1 second = $\frac{1}{60}$ of 1 m.

BOOKS.

A sheet folded in two leaves is called a folio.

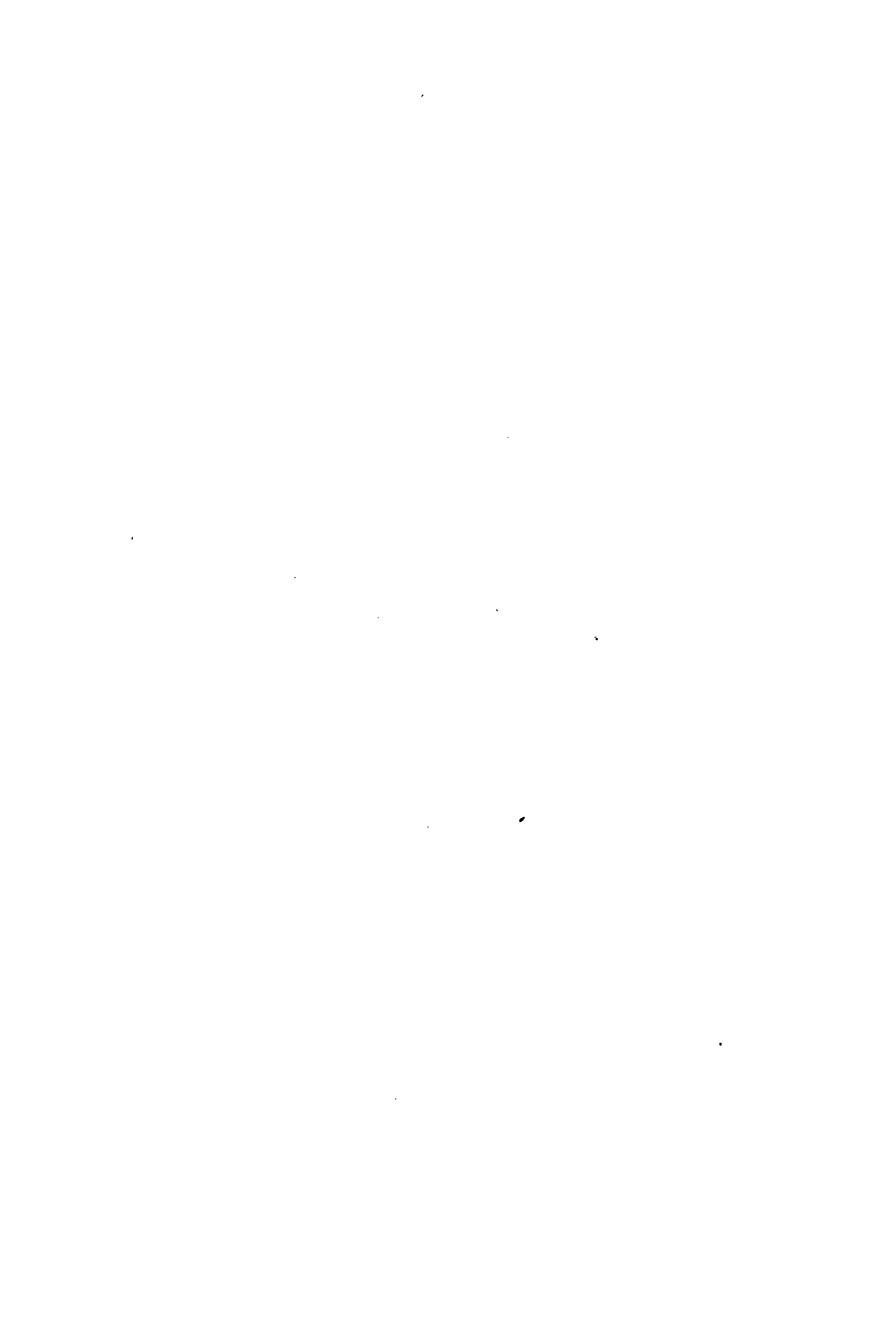
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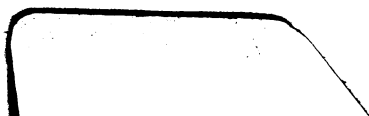


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